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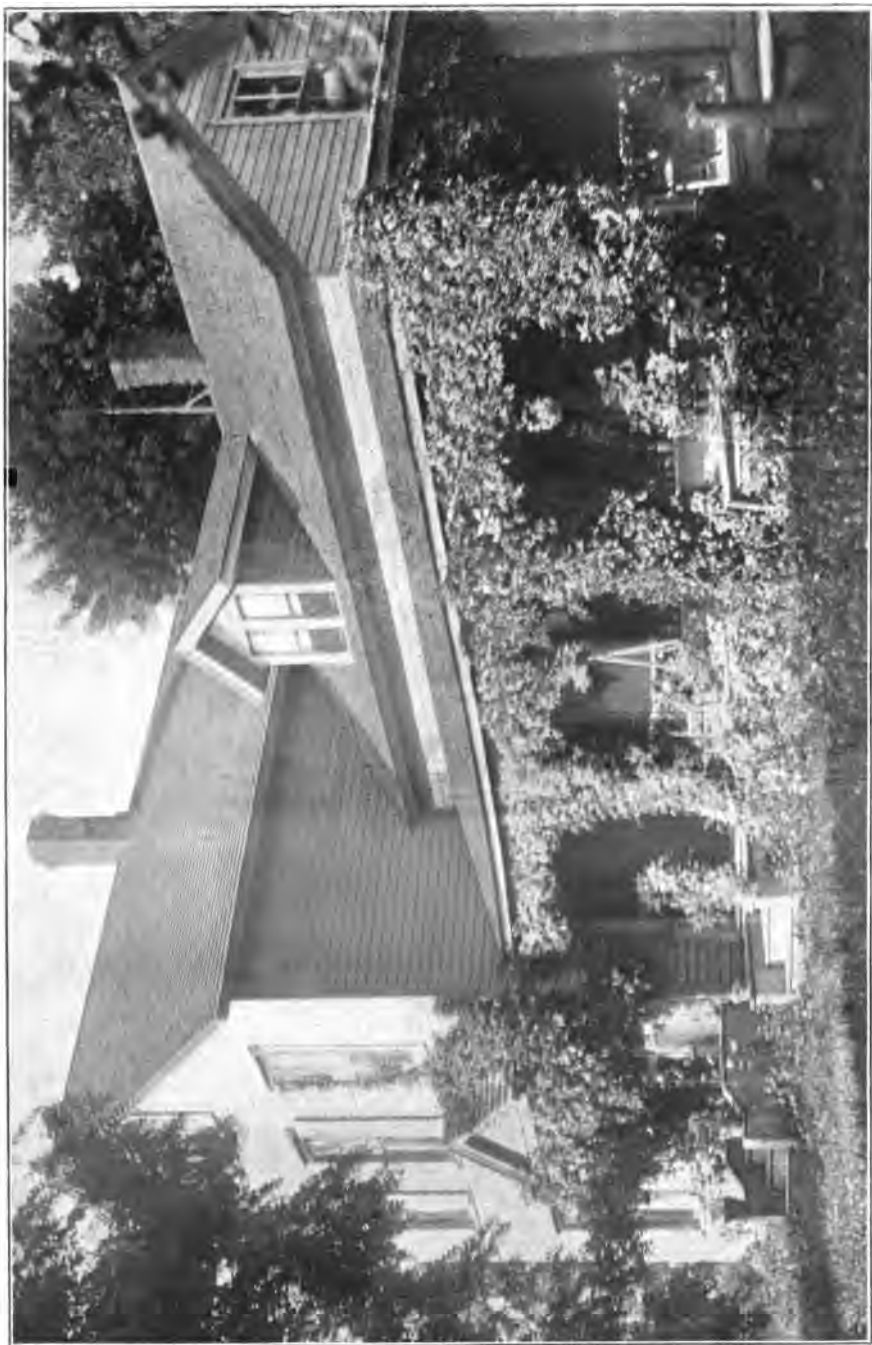
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ANNUAL REPORT

OF THE

WISCONSIN

State Horticultural Society

For the Year 1902.

Annual Meeting at Madison, February 4, 5 and 6.
Semi-Annual Meeting at Waupaca, June 5 and 6.

VOLUME XXXII.

J. L. HERBST, Secretary,
SPARTA, WIS.



MADISON
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1902.

LETTER OF TRANSMITTAL.

To the Hon. ROBERT M. LA FOLLETTE,
Governor of Wisconsin.

Dear Sir:—I have the honor of presenting to you, as is required by law, the thirty-second annual report of the transactions of the State Horticultural Society, embracing the papers read and the discussions which followed at our yearly meetings, one of which was held in the city of Madison in February, 1902, and the other in the city of Waupaca in June of the same year.

We have also published the reports of the several local societies in the state. We also show the amount of money received from the state and the manner the same has been disbursed during the year.

All of which is respectfully submitted.

J. L. HERBST,
Secretary.

Sparta, Wis., September, 1902.

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ACT OF RE-ORGANIZATION

AND LAWS RELATING TO THE

WISCONSIN STATE HORTICULTURAL SOCIETY

CHAPTER 151, LAWS OF 1879, AS AMENDED BY CHAPTER 14, LAWS OF 1887.

SECTION 1. The executive committee of the Wisconsin State Horticultural Society shall hereafter consist of the president, secretary and treasurer of said society, and of one member from each congressional district of the state, said members from the congressional districts to be chosen annually by the county and local horticultural societies in their respective districts.

SECTION 2. The present officers and executive committee of said society shall hold their respective offices until the Tuesday next succeeding the first Monday in February, and until their successors are appointed.

SECTION 3. It shall be the duty of said society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by the holding of meetings for discussion; by the collection and dissemination of valuable information in regard to the cultivation of fruits, flowers and trees adapted to our soil and climate, and in every proper way to advance the fruit and tree growing interests of the state.

SECTION 4. The annual meeting of the society for the election of its officers, the transaction of general business, and the consideration of questions pertaining to horticulture, shall be held at such time and place as may be determined at the last preceding annual meeting. In case of the failure of such meeting to so determine, the executive board may call such meeting by giving at least thirty days' notice to each member of the society.

SECTION 5. All vacancies in the offices of said society may be filled by the executive committee; and should there be a failure to elect a

member of the executive committee in any district, the vacancy may be filled by a two-thirds vote of the members of the society present at any regular appointed meeting.

SECTION 6. It shall be the duty of the secretary of said society to make an annual report to the governor of the state of the transactions of the society, including an itemized account of all moneys expended during the year, in addition to such matters as are now specified in the law relating to the same.

CHAPTER 526, LAWS OF 1889.

SECTION 5. And further, there shall be printed annually upon the approval and order of the commissioners of public printing, ten thousand copies of the transactions of the Wisconsin State Agricultural Society, the same to embrace the reports of the county and other agricultural societies, and such matters pertaining to the agricultural industries of the state as shall be deemed important, provided the whole number of printed pages shall not exceed four hundred. Seven thousand copies of the transactions of the Wisconsin State Horticultural Society, the same to embrace such abstracts of reports of county and other horticultural societies, and such matters pertaining to the horticultural interests of the state as shall be deemed important, provided that the whole number of printed pages shall not exceed two hundred. Eight thousand copies of the transactions of the State Dairymen's Association, the same to embrace such other matters pertaining to the dairy interests of the state as shall be deemed essential, provided that the whole number of printed pages shall not exceed two hundred. Twelve thousand copies of the report of the Agricultural Experiment Station of the State University, provided that the whole number of printed pages shall not exceed two hundred and fifty. Two thousand copies of each of said reports to be bound separately in cloth, all others singly in paper.

SECTION 6. The reports provided for in the preceding section shall be distributed as follows, through the superintendent of public property: Fifteen copies to each member of the legislature, fifty copies to the State Horticultural Society, ten copies to each county agricultural society, and district industrial association, which embraces two or more counties and furnishes the State Agricultural Society a report of its proceedings, to each of the four societies named in the preceding section, fifty copies of each of the reports of the other three societies, twenty-five copies of each of the reports to the library of the state university; to the governor, lieutenant-governor, secretary of state, state treasurer, attorney general, state superintendent of pub-

lic instruction, railroad commissioner and insurance commissioner, twenty-five copies each; to the state superintendent of agricultural institutes, fifty copies; to the superintendent of public property, commissioner of labor statistics, adjutant-general, quartermaster general, state board of health, each ten copies; to each public library in the state, two copies; to each state normal school, two copies; to each of the state charitable and penal institutions, one copy; and the remaining copies to the respective societies for distribution by their secretaries.

SECTION 7. In no case shall the number of printed pages in any report provided for in the act exceed the maximum number specified, except upon written request of the officers submitting the same, and then only upon previous written approval of a majority of the commissioners of public printing, such application and approval to be filed with the secretary of state.

CHAPTER 417, LAWS OF 1889.

SECTION 1. The governor is hereby authorized to set apart by proclamation one day in each year to be observed as a tree-planting or arbor day, requesting all public schools and colleges to observe the same by suitable exercises, having for their object the imparting of knowledge of horticulture, in the department known as arboriculture, and the adornment of school and public grounds.

SECTION 2. This act shall take effect and be in force from and after its passage and publication.

Approved April 16, 1889.

PURPOSES OF; APPROPRIATION.

Section 1459, Statutes of 1898, as amended by Chapter 320, Laws of 1901.

Section 1459. The Wisconsin State Horticultural Society is a body corporate by that name, with the general powers and privileges of a corporation so far as applicable. It shall be the duty of the society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by holding meetings for discussion thereof, by the collection and dissemination of information in regard to the cultivation of fruits, flowers and trees adapted to the soil and climate of this state, and in other proper ways to advance the fruit and tree growing interests thereof; and for such

purposes only it may take, hold and convey real and personal property, the former not exceeding five thousand dollars in value. For the purpose of aiding in the accomplishment of such objects the society shall be entitled to receive twenty-two hundred and fifty dollars annually from the state treasury, two hundred and fifty dollars of which shall be for the maintenance of experiment stations.

EXECUTIVE COMMITTEE; SECRETARY'S REPORT.

Section 1459a, Statutes of 1898.

Section 1459a. The executive committee of said society shall consist of the president, secretary and treasurer thereof, and one member from each congressional district in the state, these to be chosen annually by the county and local horticultural societies in the respective districts at such time and in such manner as the state society may prescribe. The executive committee may fix the time and place for holding the annual meeting of the state society, if the last meeting thereof failed to do so, and may call such meeting by giving at least thirty days' notice to each member; said committee may also fill all vacancies in the offices of the society, and if a member of such committee is not elected from any congressional district the vacancy may be filled by a vote of two-thirds of the members of the society present at any regularly appointed meeting. The secretary of the society shall make, in October of each even-numbered year, a report to the governor of the transactions thereof, including an itemized account of all moneys expended since the last report was made.

CONSTITUTION AND BY-LAWS.

CONSTITUTION.

ARTICLE I. This society shall be known as the Wisconsin State Horticultural Society.

ARTICLE II. Its object shall be the advancement of the art and science of horticulture throughout the state.

ARTICLE III. Its members shall consist of *annual* members, paying an annual fee of one dollar, which also shall entitle the wife of such member to the privileges of full membership; of secretaries of local horticultural societies reporting to the state society, who shall be considered members *ex-officio*; of *life* members paying a fee of five dollars at one time; of *honorary life* members, who shall be distinguished for merit in horticultural and kindred sciences, or who shall confer any particular benefit upon the society; and *honorary annual* members, who may, by vote, be invited to participate in the proceedings of the society.

ARTICLE IV. Its officers shall consist of a President, Vice-President, Recording Secretary, Corresponding Secretary, Treasurer, Superintendent and an Executive Board, consisting of the foregoing officers and additional members, one from each congressional district of the state, five of whom shall constitute a quorum at any of its meetings. In addition to the foregoing officers, the presidents of all local horticultural societies reporting to this society shall be deemed honorary members and *ex-officio* vice-presidents of this society. All officers shall be elected by ballot, and shall hold their office for one year thereafter, and until their successors are elected; provided, the additional executive members may be elected by the county or local horticultural societies of their respective districts.

ARTICLE V. The society shall hold its annual meeting for the election of officers, commencing on the first Monday in February. It may also hold a meeting in December of each year, at such place and time as may be decided upon by the society, or the executive committee for the exhibition of fruit and for discussions, and such other meeting for

discussions and exhibitions as the executive committee may direct, at such time and place as the executive board shall designate.

ARTICLE VI. This constitution, with the accompanying by-laws, may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

I. The president shall preside at meetings, and, with the advice of the recording secretary, call all meetings of the society, and have general supervision of the affairs of the society, and shall deliver an annual address upon some subject connected with horticulture.

II. The vice-president shall act in the absence or disability of the president, and perform the duties of the chief officer.

III. The secretary shall attend to all the correspondence, shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports. He shall also present a detailed report of the affairs of the society at its annual meeting. He shall also endeavor to secure reports from the various committees, and from local societies of the condition and progress of horticulture in the various districts of the state and report the same to the society. It shall be the duty of the secretary to make an annual report to the governor of the state of the transactions of the society, according to the provisions of the statutes for state reports.

IV. The treasurer shall keep an account of all moneys belonging to the society and disburse the same on the written order of the president countersigned by the secretary, and shall make an annual report of the receipts and disbursements, and furnish the secretary with a copy of the same on or before the first day of the annual meeting. The treasurer elect shall, before entering upon the discharge of the duties of his office, give good and sufficient bonds for the faithful performance of his duties subject to the approval of the executive committee.

V. The executive board may, subject to the approval of the society, manage all its affairs and fill vacancies in the board of officers; three of their number, as designated by the president, shall constitute a finance committee.

VI. It shall be the duty of the finance committee to settle with the treasurer and to examine and report upon all the bills or claims against the society which may have been presented and referred to them.

VII. The standing committees of this society shall be as follows: 1st, Committee on finance, consisting of three members; 2d, Committee on nomenclature and new fruits, consisting of three members; 3rd Committee on observation, as now provided. Said committee to be appointed annually by the executive committee of the society.

MEMBERS OF THE SOCIETY.

LIFE.

Ames, W. L.	Oregon, Wis.
Allis, Frank W.	Madison, Wis.
Barnes, A. D.	Waupaca, Wis.
Chappel, F. H.	Oregon, Wis.
Chandler, S. S., Jr.	Waupaca, Wis.
Converse, D. C.	Ft. Atkinson, Wis.
Carpenter, L. A.	Fond du Lac, Wis.
Edwards, F. C.	Ft. Atkinson, Wis.
Foley, M. F.	Baraboo, Wis.
France, N. E.	Platteville, Wis.
Floyd, Henry	Eureka, Wis.
Harden, F. A.	Weyauwega, Wis.
Johnson, Franklin	Baraboo, Wis.
Kellogg, Geo. J.	Lake Mills, Wis.
Kellogg, M. S.	Janesville, Wis.
Kreutzer, A. L.	Wausau, Wis.
Kierstead, E. H.	Oregon, Wis.
Loope, T. E.	Eureka, Wis.
Marshall, S. H.	Madison, Wis.
Raymer, George	Madison, Wis.
Seubert, John	Cologne, Minn.
Seymour, A. N.	Mazomanie, Wis.
Simonson, Andrew	Racine, Wis.
Tilson, Mrs. Ida E.	West Salem, Wis.
Underwood, J. M.	Lake City, Minn.

HONORARY LIFE MEMBERS.

Adams, B. F.	Madison, Wis.
Balley, L. H.	Ithaca, N. Y.
Case, F. W., ex-Secretary	Chicago, Ill.
Dartt, E. H. S.	Owatonna, Minn.

Hinckley, M. E.	Marcus, Iowa.
Patten, C. G.	Charles City, Iowa.
Phoenix, F. H.	Delavan, Wis.
Phillips, A. J.	West Salem, Wis.
Stickney, J. S.	Wauwatosa, Wis.
Trelease, Prof. Wm.	St. Louis, Mo.
Tuttle, A. G.	Baraboo, Wis.
Wiley, O. S.	Madison, Wis.

ANNUAL HONORARY MEMBERS.

Frank E. Pease	Des Moines, Iowa
Wyman Elliott	Minneapolis, Minn.
A. W. Latham	Minneapolis, Minn.
Jonathan Perian	Chicago, Ill.
Jacobson, Miss Emma	Chicago, Ill.
C. E. Bassett	Fennville, Mich.
F. M. Webster	Urbana, Ill.
Trelehan, Miss Edith	Omro, Wis.
J. C. Blair	Urbana, Ill.
F. W. Taylor	Washington, D. C.
T. S. Bigger	Fulton, Wis.
A. G. Long	Excelsior, Minn.

ANNUAL MEMBERS.

Abbott, C. A.	Appleton, Wis.
Abbott, Mrs. C. A.	Appleton, Wis.
Allis, Frank W.	Madison, Wis.
Burnham, M.	Waupaca, Wis.
Becker, W. H.	Berlin, Wis.
Brown, C. R.	Eau Claire, Wis.
Bernet, E. J.	La Crosse, Wis.
Bussey, W. P.	Omro, Wis.
Buck, J. P.	Appleton, Wis.
Buck, Mrs. J. P.	Appleton, Wis.
Broome, Richard	Stoughton, Wis.
Bright, W. H.	Ft. Atkinson, Wis.
Cairns, Gertrude B.	Ellsworth, Wis.
Craneheld, Frederic	Madison, Wis.

Christianson, H. C.	Oshkosh, Wis.
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Chase, F. B.	Chippewa Falls, Wis.
Drake, W. H.	Lake Mills, Wis.
Everitte, C. H.	Racine, Wis.
Edwards, A. J.	Ft. Atkinson, Wis.
Eells, H.	Waupun, Wis.
Fairbanks, Z. C.	Traverse City, Mich.
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Hatch, C. A.	Richland Center, Wis.
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Hanchet, Wm.	Sparta, Wis.
Herbst, J. L.	Sparta, Wis.
Harris, H. H.	Warrens, Wis.
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Hager, W. S.	West Depere, Wis.
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Jeffrey, Geo. J.	Milwaukee, Wis.
Johnson, Mrs. F.	Baraboo, Wis.
Johnson, Franklin	Baraboo, Wis.
Jewett, Z. K.	Sparta, Wis.
Kellogg, L. G.	Ripon, Wis.
Kelley, A. N.	Mineral Point, Wis.
Kluck, N. A.	McConnell, Ill.

Laiten, L. F.	Omro, Wis.
Loope, T. E.	Eureka, Wis.
Loope, Mrs. T. E.	Eureka, Wis.
Lawton, W. A.	Twin Bluffs, Wis.
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Leggett, E. H.	New York, N. Y.
Meixner, Jno.	De Forest, Wis.
Mueller, Emilie T.	Calhoun, Wis.
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Nichel, E. S.	Seymour, Wis.
Ovendum, Frank.	Madison, Wis.
Olson, J. B.	Ripon, Wis.
Phillips, A. J.	West Salem, Wis.
Parsons, A. A.	Omro, Wis.
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Pearsons, Chas. L.	Baraboo, Wis.
Pfaender, Wm.	New Ulm, Minn.
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Rogers, D. G.	Milwaukee, Wis.
Riordan, D. E.	Eagle River, Wis.
Reitbrock, Fred.	Milwaukee, Wis.
Rannum, O. K.	Dodgeville, Wis.
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Reynolds, E. M.	Prescott, Wis.
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Sheldon, E. T.	Omro, Wis.
Smith, S. D.	Poy Sippi, Wis.
Spry, Jno.	Ft. Atkinson, Wis.
Smith, Irving C.	Green Bay, Wis.

Smith, B. H.	Tiffany, Wis.
Stark, Frank	Randolph, Wis.
Smith, Geo. B.	Green Bay, Wis.
Skewes, E. B.	Union Grove, Wis.
Sperbeck, M. V.	Oshkosh, Wis.
Trelevan, Jos.	Omro, Wis.
Trelevan, Mrs. Jos.	Omro, Wis.
Toole, Wm.	Baraboo, Wis.
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Tichenor, W. M.	Waupun, Wis.
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Tieman, Mrs. Sarah	Eureka, Wis.
Taylor, Wm. L.	Mt. Hope, Wis.
Tamblington, R. A.	Ft. Atkinson, Wis.
Thompson, E. E.	Madison, Wis.
Ulrich, F.	Dorchester, Wis.
Van Epps, A. J.	Waupaca, Wis.
Williams, Mrs. N.	Eureka, Wis.
Williams, Dan'l	Summit Centre, Wis.
Wilkins, A. P.	Delavan, Wis.
Wyman, E.	Casco, Wis.
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FRUIT LIST.

A LIST OF FRUITS GROWN BY MEMBERS OF THE WISCONSIN STATE HORTICULTURAL SOCIETY,

As catalogued by the Wisconsin State Horticultural Society. Those marked with an asterisk (*) are recommended for Wisconsin.

APPLES. (Pyrus.)

Section I.—CRABS.

[KEY.—Size, scale 1 to 10; 1, very small; 10, very large. Form: c, conical; l, irregular; o, oblate; ob, oblong; ov, ovate; r, round. Color: d, dark; g, green; r, red; ru, russett; s, striped; w, white; y, yellow. Flavor: a, acid; m, mild; s, sweet. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: c, cider; d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am, America; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Holl., Holland; Ont., Ontario; Rus., Russia; Scot., Scotland.]

NAME.	DESCRIPTION.						
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.
Brier.....	7	r	r	5	em	km	Wis.
*Martha.....	5	ob	yr	5-6	e	km	Minn.
Minnesota.....	10	ob	yr	5	e	km	Minn.
Tra scudent.....	7-8	r	yr	5-6	e	km	Am.
*Whitney.....	8	rc	r	8-9	em	dkm	Ill.
*Hyslop.....	6	r	r	3	em	km	Am.
*Hibb.....	6	o	yr	9	e	k	Wis.
*Virginia.....	5	rob	yr	5	l	kd	Wis.
Spitzenberg.....	5	ob	r	10			

Section II.—APPLES.

*Avista.....	9	rc	yg	5-7	l	dkm	Wis.
*Arabka.....	9	obc	yg	5-7	e	dkm	Rus.
Alexander.....	9-10	oc	yrs	5	m	km	Rus.
*Anisim.....	4-5	rc	yr	7	m	dm	Rus.
*Antonovka.....	6	ovc	y	7	m	km	Rus.
Arctic.....	7-8	rc	yr	3	l	km	N. Y.
Gabbitt.....	5-6	r	r	5-6	l	dkm	Mo.
*Bailey.....	9-9	r	r	7-8	l	dm	N. Y.
*Ben Davis.....	6-9	rov	yrs	4-5	l	m	Kv.
*Charlamoff.....	5-6	rc	grs	6	e	dm	Rus.
Clayton.....	6-8	oc	yrs	6-7	vl	km	Ind.
Early Harvest.....	5-6	ro	yw	9	ve	dk	Am.
Early Joe.....	3-4	oc	yrs	8-9	e	d	N. Y.
*Eureka.....	6-8	rob	gyr	6-7	l	dkm	Wi.
*Fall Orange.....	8-9	r	yr	3-4	m	k	Mars.
Fall Queen.....	6-8	oc	gyr	7-8	l	km	Va.
*Fall Spitzenburg.....	6-8	rc	gyr	7-8	l	dkm	Va.
Fall Wine.....	5-6	ro	yr	8-9	m	d	Am.
*Fameuse.....	5-0	ro	yrs	8-9	m	dm	Fr.

Section II.—APPLES—Continued.

NAME.	DESCRIPTION.						
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.
Golden Russett.....	4-6	ro	yr	5-6	vl	dm	Eng.
Gravenstein.....	8-9	oi	yr	8-9	em	dkm	Ger.
Grimes Golden.....	5-6	roc	y	9-10	l	d	Va.
Hass.....	5-7	oc	gyr	4-6	em	km	Mo.
Hiberna.....	5-7	obc	rs	3-5	m	km	Rus.
Jonathan.....	5-6	rc	yr	8-9	l	dkm	N. Y.
Keswick.....	6-7	ci	gyr	5-6	em	k	Eng.
Kinnard.....	5-6	oci	yr	5-6	l	dk	Tenn.
Loughfield.....	5-6	ro	y	4-5	e	k	Rus.
Louise.....	8-9	ro	we	5-6	l	d	Ont.
Lowe.....	8-9	ob	y	6-7	e	km	Am.
Lowell.....	8-9	ob	y	7-8	e	km	Am.
Lubek Queen.....	6-7	r	r	6-7	l	dm	Rus.
McMahon.....	8-9	ro	yw	4-5	m	dm	Wis.
Maiden Blush.....	5-6	o	yr	5-6	e	km	N. J.
Malinda.....	6-7	rc	yr	5-6	vl	dkm	Vt.
Mann.....	6-7	ro	ygl	4-5	vl	wk	N. Y.
Melon.....	6-7	roc	yr	7-8	l	dm	N. Y.
Moscowkee.....	7-8	ro	yr	5-6	l	km	Wis.
Munkier.....	6-7	rc	gyr	6-8	l	m	Pa.
N. well.....	7-8	rob	yr	5-6	l	km	Wis.
Northern Spy.....	8-9	roc	yr	8-9	ml	dkm	N. Y.
N. W. Greening.....	8-9	rc	gy	6	e	km	Wis.
O. abona.....	5	rob	rs	4-6	me	km	Minn.
Oldenburg.....	5-6	o	yr	4-5	e	km	Rus.
Pattens Greenings.....	8-9	r	y	5-6	ml	km	Iowa.
Peerless.....	5	or	s	5-6	l	m	Minn.
Perry Russett.....	5-6	rc	yr	5-6	ml	dk	N. Y.
Peter.....	7-8	r	gy	6-7	m	km	Minn.
Pewaukee.....	8-9	ro	yr	4-5	l	km	Wis.
Pi mb Cider.....	5-6	rc	yr	5-6	m	dm	Wis.
Pound Sweet.....	8-9	r	gw	5-6	ml	k	Conn.
Ramsdell.....	7-8	obc	r	6-7	m	km	Am.
Raspborry.....	3-4	obi	r	6-7	me	km	Rus.
Red Astrachan.....	7-8	rc	rgy	5-6	e	km	Rus.
Hepka.....	3-4	rc	rs	5	lm	k	Rus.
Roman Stem.....	5-6	r	wyr	8-9	l	dk	N. J.
Salome.....	5-6	rob	yr	7-8	vl	dkm	Ill.
Scotts Winter.....	5	rc	rs	5-7	l	km	Vt.
Sops of Wine.....	5-6	r	yr	5-6	e	d	Eur.
Switzer.....	5-6	r	wr	6-7	e	k	Rus.
Tetolski.....	7-8	oci	yr	5-6	m	km	Rus.
Talman Sweet.....	5-6	ro	y	6-7	l	km	K. I.
Twenty Ounce.....	9-10	r	yr	6-7	ml	km	Conn.
Utter.....	7-8	r	yr	6-7	m	dm	Am.
Walbridge.....	5-6	oc	yr	5-6	l	m	Ill.
Wealthy.....	6-7	ro	yr	6-7	m	dkm	Minn.
Willow Twig.....	6-6	roc	yr	5-6	vl	m	Va.
Windsor.....	5-6	r	yr	6	ml	m	Wis.
Winesap.....	5-6	rob	yr	7-8	vl	dkm	N. J.
Wolf River.....	9-10	ro	wrs	5-6	m	km	Wis.
Wis Russett.....	5-7	rob	yr	5	l	km	Wis.
Yellow Transparent.....	6-7	rc	wy	5-6	e	km	Rus

PLUMS. (Prunus.)

[KEY.—Size, scale 1 to 10; 1, very small; 10, very large. Form: c, compressed; f, flattened; o, oval; ob, obovate; obl, oblong; r, round. Color: b, black; br, brown; g, green; p, purple; r, red; v, violet; w, white; y, yellow. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market; c, curing. Abbreviations of names of places of origin: Am., America; Belg., Belgium; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Jap., Japan; Ont., Ontario; Rus., Russia.]

NAME.	Class.	DESCRIPTION.					
		Size.	Form.	Color.	Qual-ity.	Ad-hesion.	Sea-son.
*De Soto.....	Am...	6	ro	yr	g	.....	m
*Cheney.....	8	r	ry	g	c	me
*Wolf.....	6	ro	r	f	.....	m
*Rockford.....	6	ro	yr	g	.....	ml
*Miner.....	6	lr	pr	g	c	l
*Hawkeye.....	6	r	r	g	.....	wl
*Wyant.....	4	ro	yr	f	.....	m
*Abundance.....	Jap...	6	ro	br r	f	.....	em
*Green Gage.....	4	r	gy r	b	f	m
*Lombard.....	6	rovd	r p	g	c	l
*Hudson River.....	8	o	r p	g	.....	m
*Purple Egg.....	6	r f	v y	f	.....	m
*Moore's Arctic.....	6	ro	b	m	.....	c
*Rollingstone.....	6	ro	r	i	.....	ml
*Gay's rd.....	8	ro	ry	f	.....	ml
*Burbank.....	Jap...	6	r	py	f	.....	ml
*Stoddard.....	8	r	r	f	.....	me
*Aitkin.....	8	o	r	f	.....	me
*Wickson.....	Jap...	8	r w	br	g	.....	m
*Red June.....	6	ov	r	f	.....	ve
*Milton.....	6	ro	r	f	.....	l
*German Prune.....	8	o	p	f	.....	m
*Green Gage.....	6	ob	g	e	.....	ml
*Mariana.....	6	r	r	p	.....	l
*Wild Goose.....	8	r	r p	i	.....	ml
*Chas. Downing.....	6	ro	r	f	.....	we
*Weaver.....	6	o c	r	f	.....	m
*Yellow Egg.....	8	o	y	p	.....	e
*Dentition.....	4	o	p	p	.....	l
*Quackenbusch.....	8	ob f r	p	f	.....	ml
*Black Hawk.....	8	ro	r	g	.....	ml
*Maldavka yellow.....	8	o	y	g	.....	e
*Quaker.....	8	ro	ry	g	.....	e
*Ocheda.....	6	ro	ry	g	.....	ml

NOTE.—The plums that may be grown in Wisconsin are of four classes: American or improved natives, Japan and European. The first class (Am.) is hardy in all parts of Wisconsin, while the Japan and European are recommended for the lake region.

CHERRIES. (*Cerasus*.)

[KEY.—Size, scale 1 to 10; 1, very small; 10, very large. Form: c, compressed; h, heart shaped; o, oblate; r, round. Color: a, amber; b, black; p, purple; r, red; y, yellow. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Ont., Ontario; Rus., Russia.]

NAME.	Class.	DESCRIPTION.					
		Size.	Form.	Color.	Quality.	Season.	Origin.
*Bessarabian.....	Morello	5-6	r	r	5	l	Rus.
Dyehouse.....	Morello	5-6	ro	r	5-6	ve	Ky.
*Late Kentish.....	Morello	5-6	p	r	4-5	lm	Am.
Lutovka.....	Morello	7-8	r	r	4-5	em	Rus.
May Duke.....	Morello	6-7	rh	r	8-9	e	Fr.
*Montmorency.....	Morello	7-8	r	r	7-8	em	Fr.
*Morello.....	Morello	6-7	rh	rb	5-6	l	Eng.
Ostheim.....	Morello	6-7	e	rb	6-7	m	Rus.
*Richmond.....	Morello	5-6	r	r	5-6	e	Eur.
Windsor.....	Sweet...	8	h	yr	7-8	l	Ont.
Wood.....	Sweet...	7-8	rh	yr	7-8	em	Ohio.
Kings Amarella.....	Morello						

STRAWBERRIES. (*Fragaria*.)

[KEY.—Sex: s, staminate; p, pistillate. Size, scale 1 to 10; 1, very small; 10, very large. Form: c, conical; co, compressed; l, long; o, oblate; ob, oblong; ov, ovate; r, round; l, irregular. Color: c, crimson; d, dark; l, light; r, red; s, scarlet. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; m, market. Abbreviations of names of places of origin: Am., America; Austr., Australia; Can., Canada; Ont., Ontario.]

NAME.	DESCRIPTION.						
	Size.	Form	Color.	Qual- ity.	Sex.	Sea- son.	Tex- ture.
*B. Wood.....	6	rob	pr	g	s	e	f
*Bubach.....	8	obrc	bc	vg	p	m	f
*Brandywine.....	8	oc	c	g	s	l	m
Brunette.....	6	r	dr	g	s	m	m
Clyde.....	8	obrc	s	g	s	m	m
*Crescent.....	7	c	ds	g	p	m	f
*Enhance.....	7	rc	pr	g	s	ml	m
Glen May.....	7	co	br	g	s	m	m
*Grandy.....	7	rc	pr	g	s	l	f
*Haverland.....	7	ob	bc	vg	p	m	s
*Jessie.....	8	obc	bc	vg	s	m	s
Lovette.....	7	rc	pr	g	s	m	m
McKinley.....	7	oc	dr	g	s	m	f
Marshall.....	8	co	dr	g	s	ml	f
Michel E.....	6	rc	pr	vg	s	e	f
Margaret.....	7	c	dr	g	s	ml	f
*Parker Earle.....	7	c	pr	g	s	l	f
*Splendid.....	6	rob	pr	f	s	m	f
Wolverton.....	6	c	dr	f	s	m	f
*Warfield.....	6	c	dr	vg	p	m	f
Wm. Belt.....	8	co	br	g	s	m	m
*Van Deman.....	6	rc	dc	g	s	m	i
Yale.....	7	rc	dr	g	s	l	i
*Saunders.....	7	c	c	f	s	e	m
*Rio.....	6	c	dr	g	s	m	f
*Wolverton.....	7	c	dc	f	s	m	m

GRAPES. (Vitus.)

[Key.—Size, scale 1 to 10; 1, very small; 10, very large. Form: o, oval; r, round. Color: a, amber; b, black; g, green; r, red; w, white; y, yellow. Quality, scale 1 to 10; 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; m, market; w, wine. Abbreviations of names of places of origin: Am., America; Ont., Ontario.]

NAME.	DESCRIPTION.					
	Size.]	Form.	Color.	Qual-ity.	Sea-son.	Origin.
*Agawam.....	8-9	ro	p b	6-7	m	Mass.
*Brighton.....	7-8	r	r	7-8	e	N. Y.
*Concord.....	7-8	r	b	5-6	m	Mass.
*Delaware.....	2-3	r	r	10	m	N. J.
*Diamond.....	6-7	r	g w	7-8	m	N. Y.
Janesville.....	5-6	r	b	3-4	e	Wis.
Lady.....	7-8	r	w	6-7	e m	Ohio.
*Lindley.....	5-6	ro	r	5-6	m	Mass.
*Mossasoit.....	7-8	r	r	5-6	m	Mass.
*Moore's Early.....	8-9	r	b	6-7	e	Mass.
*Niagara.....	8-9	r	w	7-8	m l	N. Y.
*Pocklington.....	8-9	r	w y	6-7	e m	N. Y.
Salem.....	9-10	r	b	7-8	m	Mass.
*Vergennes.....	7-8	o	r	8-9	m	Vt.
*Wilder.....	9-10	r	b	7-8	m	Mass.
Woodruff.....	8-9	r	r	6-7	e m	Mich.
*Worden.....	7-8	r	b	7-8	e m	N. Y.
*Merrimac.....	8-9	r	b	7	m	Mass.

RASPBERRIES. (Rubus.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; o, obtuse; r, roundish. Color: b, black; c, crimson; l, purple; r, red; s, scarlet; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Eng., England; Eur., Europe; Fr., France; Ont., Ontario.]

NAME.	DESCRIPTION.					
	Size.	Form.	Color.	Qual-ity.	Sea-son.	Origin.
*Columbian.....	9-10	r	p	6-7	e	N. Y.
*Conrath.....	8-9	o v	b	8-9	e	Mich.
Cumberland.....	9-10	o v	b	9-10	e	Pa.
*Cuthbert.....	7-8	rc	r	6-7	m	N. Y.
Doolittle.....	5-6	r	b	5-6	e	N. Y.
Eureka.....	6-7	r	b	5-6	e m	Ohio.
*Gregg.....	7-8	ro	b	5-6	m	Ind.
Golden Queen.....	7-8	rc	y	6-7	m	N. J.
*Kansas.....	6-7	r	b	6-7	m	Kans.
*Loudon.....	6-7	rc	r	7	m	Wis.
*Marlboro.....	7-8	r	r	4-5	m	N. Y.
Miller.....	7-8	r	r	7-8	e	DeL.
*Nemaha.....	7-8	ro	b	5-6	e	Nebr.
*Ohio.....	5-6	r	b	4-5	e	Ohio.
*Older.....	5-6	r	b	5-6	e m	Iowa.
*Palmer.....	6-7	r	b	5-6	e	Ohio.
*Shaffer.....	8-9	r	p	6-7	m	N. Y.
Southern.....	3-4	r	b	5-6	m	N. L.
Turner.....	4-5	rc	r	7-8	m	Ill

BLACKBERRIES AND DEWBERRIES. (Rubus.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; o, oblong; ov, oval; r, round. Color: b, black. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America.]

NAME	DESCRIPTION.					
	Size.	Form.	Color.	Qual-ity.	Sea-son.	Origin.
*Briton.....	5-6	o ov	b	5	m	Wis.
Early Harvest.....	4-5	ro	b	7-8	e	Ill.
Eldorado.....	7-9	o	b	7-8	e	Ohio.
Minnewaska.....	9	o v	b	6	m	N. Y.
*Snyder.....	C-7	o	b	7-8	m l	Ind.
*Stone.....	5	ro	b	7-8	l	Wis.
Triumph.....	5-6	o ov	b	6	l	Am.
*Badger.....	6-7	o ov	b	6	m	Wis.

DEWBERRIES.

Lucretia.....	9-10	o ov	b	3	e	W. Va.
Bartell.....	8-9	o ov	b	7	m	

CURRANTS. (Ribes.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: r, round. Color: b, black; r, red; w, white. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Eur., Europe; Fr., France; Ont., Ontario.]

NAME.	DESCRIPTION.					
	Size.	Form.	Color.	Quality.	Season.	Origin.
*Prince Albert.....	7-8	r	r	7-8	e	Eur.
Cherry.....	9-10	r	r	5-7	m	Eur.
Fay.....	9-10	r	r	5-6	m	N. Y.
*Holland.....	5-6	r	r	4-5	e m	Am.
Market.....	5-6	r	r	4-5	m	Eng.
North Star.....	5-6	r	r	5-6	l	Minn.
Red Cross.....	9-10	r	r	9-10	m	N. Y.
*Red Dutch.....	6-7	r	r	8-9	m	Eur.
Ruby Castle.....	6-7	r	r	6-8	m	
*Victoria.....	6-7	r	r	5-6	m	Eng.
*White Dutch.....	6-7	r	w	9-10	m	Eur.
*White Grape.....	7-8	r	w	8-9	m	Eur.
*Wilder.....	8-9	r	r	7-8	m	N. Y.
*Lee's Prolific.....	8-9	r	b	6-7	m	Am.
*Naples.....	6-7	r	b	6-7	m	Eur.

GOOSEBERRIES. (*Ribes*.)

[Key.—Size 1 to 10: 1, very small; 10, very large. Form: o, oval; r, round. Color: g, green; r, red; w, white; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Ont., Ontario.]

NAME.	DESCRIPTION.					
	Size.	Form.	Color.	Qual-ity.	Sea-son.	Origin.
Chatauqua	8-9	ro	g w	9-10	m	N. Y.
Champion	5-6	ro	gy	5	e	Am
*Downing	5-6	r	g	5-6	m	N. Y.
Industry	9-10	ro	r	6-7	e	Eng.
*Houghton	2-3	ro	gr	7-8	m	Mass.
Pearl	5-6	r	g	9-10	m	Ont.
*Red Jacket	5-6	ro	r	8	e	Ont.
Smith	5-6	o	yk	9	e	Vt.
*Triumph	8-9	ro	g w	7-8	e	Pa.
*Columbus	8-9	ro	gy	9-10	m	Am.
*Queen	8-9	ro	yg	7-8	m	Wis.

TREES AND SHRUBS RECOMMENDED.

EVERGREENS.

For screens and windbreaks—Norway Spruce, Balsam Fir, White Pine.

For hedges and screens for shearing—Norway Spruce, American Arbor Vitae, Red Cedar.

For lawns and cemeteries—Norway Spruce for backgrounds. For groups—American Arbor Vitae, Hovey's Golden, Arbor Vitae Pyramidalis, Arbor Vitae Siberian, Arbor Vitae, Juniper Excelsa, with Protection.

For small lawn decoration—Juniper Sueda, Arbor Vitae, Hovey's Golden Arbor Vitae, Arbor Vitae Pyramidalis.

DECIDUOUS TREES.

For cemeteries—Cut-leaved Birch, Wisconsin Weeping Willow, Weeping Poplar.

For lawns—All named above, and, in addition, Laurel-leaved Willow, Mountain Ash Oak-leaved, Mountain Ash American, Mountain Ash European, Maple Cut-leaved, Maple Norway, Kentucky Coffee Tree, Catalpa, Spicosa, Elm American, Elm Scotch, Elm Weeping, European White Birch.

SHRUBS.

For cemeteries—Hydrangea, Paniculata, Cornus Philadelphus, Tree Lilac, Spirea, Japonica, Spirea Van Houtii, Wahoo (American Strawberry Tree), Exchordia Grandiflora.

For lawns—All named above and, in addition, Purple Barberry, Purple Fringe, Upright Honeysuckle, Wigella Rosea.

For screens and hedges—Upright Honeysuckle, Barberry Red Fruiting.

ROSES.

Twelve best varieties hybrid perpetual—Paul Neyron, Mrs. J. H. Laing, Gen. Jacqueminot, Dinsmore, Marshall P. Wilder, Coquette des Blanches, Earl of Dufferin, Jules de Margottin, Vick's Caprice, Magna Charta, Prince Camille de Rohan, General Washington.

Moss roses, four best varieties—Perpetual White, Salet, Paul Fontaine, Henry Martin.

Climbers, five best varieties—Prairie Queen, Russel's Cottage, Seven Sisters, Gem of the Prairies, Victor Verdier.

Hybrid china—Madam Plantier, Madam Hardy.

Brier roses—Persian Harrison.



COLORADO SPRUCE.



SCOTCH PINE IN MARCH, 1902.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society.

ANNUAL WINTER MEETING.

The Annual Winter Meeting of the Wisconsin State Horticultural Society was held at Madison, February 4th, 5th and 6th, 1902.

The morning session, February 4th, was called to order at 9 A. M. by President T. E. Loope.

Mr. Irving Smith led in prayer.

The President announced the following committee on Fruit Awards: A. L. Hatch, L. G. Kellogg, and W. Hall; Reception committee: F. C. Edwards, L. Laiten, and D. C. Converse.

The Secretary presented to the meeting the credentials of Mr. Frank E. Pease, of the Iowa State Horticultural Society, and on motion, Mr. Pease was made honorary member of the Society.

Mr. Wyman Elliott and Mr. A. W. Latham, both of the Minnesota State Horticultural Society, were also made honorary members.

The President then read his address:

PRESIDENT'S ADDRESS.

Members of the Wisconsin State Horticultural Society:—
Ladies and Gentlemen: We are again assembled for deliberation and work. No doubt many of you have sketched in your minds new lines of action for our Society, and yet I may be pardoned for bringing to your notice a few thoughts as they occur to me or have been suggested by others.

The year which has passed since I have occupied the honorable position to which you have elevated me, has been pregnant of grand results in the history of our Society. Our status as respects our commonwealth has been improved and rendered vastly more important, as I firmly believe. This comes of having made our people see more clearly our purposes and works. A still closer scrutiny of our aims and objects by the mass of the people would, I believe, result in raising their estimation of us as a horticultural body, and thereby secure their further appreciation. I do not wish you to think I am trying to magnify our importance, for I am stating what I consider a fact. I believe that the Wisconsin Horticultural Society is entitled to the respect and approbation of our people because it has for many years been adding its knowledge and experience to the general knowledge of our agricultural needs.

We have many excellently equipped members who have labored intelligently in the horticultural field for years, and their wisdom has benefited any one who has planted tree, bush, flower or plant. I refer to this past year because I know more of its results. I know the exhibit at the Pan-American Exposition attracted widespread and favorable comment. I believe also that it has resulted in our being better known and that to know us is to love us. The press of the state have generally been kind to us. They have been very generous in giving our exhibit at Buffalo special praise, and even the press of other states have added their encomiums to the splendid showing we made there. This cannot but be a source of great pride and gratification to you all, as it has been of infinite satisfaction to me individually. It would seem that you are reaping some of the fruit of your labors when you can make such a display; that the faith you have cherished so long had ripened to realization.

How was this accomplished? By the unity and harmony of action among the members of our society. Easy? Yes, when none hold back or criticise, our ship sails on even keel.

In all our work everyone responded with alacrity and helpfulness. There was not a crank in all our reputed crowd of cranks,—not a growl among the growers. “I told you so” has not even been whispered so far as I know. You may be

able to estimate my gratitude to you all in this Pan-American business, but I doubt your ability to do so. What are the tangible results? Admittedly the highest honors, and medals galore. Even our competitors lauded us, and the millions of visitors at the Pan-American gave us unstinted admiration.

Better than medals is the fact that we have brought our society to notice of the people of our state and that notice a flattering one. They will appreciate our usefulness and absorb the knowledge we extend.

To the members of the Wisconsin Commission this society owes a debt of gratitude for their interest in and appreciation of our exhibit. They furnished material aid in the beginning but with little faith in the "cranky horticulturists." As soon as they saw the merit of our work they became most enthusiastic and were ever ready in act and word to help us on. When at the close we found a deficit they stepped into the breach and generously wiped it out. I shall not soon forget their generosity. If I may use slang I would say "they are the stuff."

It seems to me that we should do no less than make them Honorary Life members.

Our relation to the State Experimental Station and the State Agricultural Society should be made an earnest problem. It will help us if a better understanding can be arrived at and I believe it would benefit them.

The objects we strive for run in parallel lines with their work and in union there is strength. There surely ought to be no antagonism from either side.

The Trial Orchards should continue to enlist our earnest and intelligent endeavor. I believe we should establish one or more in the Northwestern part of the state in the near future.

The northern part of the state is rapidly filling up with a population who will need careful and authentic information regarding the planting of fruit which is adapted to the conditions which prevail in their different localities. You should be able to furnish them all necessary knowledge. You have no right and I believe no desire to fail in your duty. Let your motto be "Forward."

With increased responsibilities you should try to deserve appropriations suitable to your needs. The state cannot afford to

lose your services and with her usual generosity will respond if her attention is brought to bear on the subject in a proper manner.

The Louisiana Purchase Exposition, in St. Louis, in 1903, is a subject worthy your attention. If you decide to make an exhibit there you ought to prepare for it and with great care. I leave it for you to outline and discuss plans but will say that it is possible for you to entirely eclipse any effort hitherto made.

Should you attempt an exhibit the same harmony, the same enthusiasm which you have shown the past season would surely result in the achievement of added honors, as a sequence of better preparation. The faithful work of those who had charge at Buffalo of our exhibit calls for highest praise. It was installed with good judgment and excellent taste. It was cared for scrupulously and conscientiously and all seemed as interested as if it was their own personal exhibit. It was closed up in good order and was a grand success from start to finish.

I can not forbear to speak a word in commendation of one of the officers of the Exposition. Always a gentleman, always a friend, Prof. Van Deman was the sheet anchor that never failed us. His helpfulness made you happy—his presence was inspiring—and he was glad to do a favor. "May his shadow never grow less." Wisconsin should never forget him.

For your enthusiasm and harmony during the season past, for your unvarying forbearance with my shortcomings and for the courtesy and kindness I have received on every hand I am deeply grateful—more so than my words express.

On motion of Mr. Edwards, the recommendations contained in the address of the President were referred to the first three members of the Executive Board.

STRAWBERRIES.

By J. J. Ihrig.

My first thought on this subject takes me back to our boyhood days, when we first picked the delicious wild strawberries in the meadow, in such abundance, which nature so freely supplied. And, I remember well the strawberry shortcake, strawberries and cream, and especially the strawberry "kuchen" that my Grandmother made which so gratified my appetite and for which the human stomach is always ready to expand.

It was then that I made my first start in strawberry culture, with one wild strawberry plant, that I found in the pathway leading to the meadow and which I so carefully planted and tended, keeping off the runners so as not to let it intermingle with the plants that were in the garden bed; as, that single plant was my individual property; and I can now remember how well the plant budded up in the hill and rewarded me with its fruit; and here I received my first suggestion of hill culture.

The strawberry, the first fruit to ripen, comes to the table when the appetite is capricious, as a welcome visitor; in healthfulness so beneficial and nourishing to the most delicate stomach.

The value is not confined to the eating, however. No other fruit gives so quick returns. It affords easy, pleasant, and profitable employment for old and young. Perhaps nothing will so educate and develop the mind of boy, girl, or man, as the study and culture of the strawberry plant and make them love the pursuit of horticulture.

The strawberry season is, also, a blessing to the house wife who dreads the heat of the fire. She knows from past experience if there are plenty of fresh strawberries and cream, good bread and butter with an occasional shortcake there will be no complaint.

Perhaps you expect a paper on the most successful culture of the strawberry for the home garden or commercial grower. But, when I remember of reading the discussions and experiences, and the different opinions of such men as Geo. Kellogg, R. M. Kellogg, J. H. Hale, E. W. Wooster, J. W. Adams, H.

Jerolaman and others; one says plant only in the spring having matted rows, another says potted or good layer plants set in August, and another in October, and get your crop the next summer or season. Why! I know not what to say for all of these men are old experienced strawberry growers and have all made a success in the business.

Now, the problem of how to make the most money in the business becomes a difficult one for me to solve; but, I think we must, through discussions at horticultural meetings of the different opinions, be able to learn and decide as to our locality, which would be the best method to pursue to obtain that success. My experience has been somewhat like that of Pres. Loope, when he said have faith. I still have faith that perhaps some day I will be successful in knowing how and when to plant and cultivate and care for a plantation of strawberries successfully and at a good profit.

My best record of gross receipts is at the rate of \$530 per acre, the varieties were Enhance and Rio, one row of each. I never have grown strawberries on a large scale but hope when I do that I will be able to show results at a good profit.

The requisites for the growing and culture of the strawberry are: First—a good vigorous plant be it spring, summer, or fall set. Second—a good rich soil, well prepared. If possible I would always prepare the soil a year before by manuring well, then plowing deep and growing some hoed crop, keep free from weeds and again plow deep in the fall and if spring set plow deep again in the spring. Harrow lightly and when land is ready for planting do the work of setting yourself or get only competent help. Then with a line for marker and trowel for making hole set your plant with the crown on a level with ground, press firmly. For spring planting I would set in rows 4 ft. apart and from 16 to 18 in. in row, allowing it to spread to the width of 12 inches.

For summer planting I would not have rows more than 3½ feet apart by 12 inches in the row. And for late fall setting would set 2 feet by 6 inches in the row. Immediately after setting commence cultivation and keep free of weeds. I some times think that weeds are a blessing to the strawberry growers for if they keep the beds free of weeds by cultivation they

thereby stimulate growth of plants and retain the moisture as water is very essential to success in growing good strawberries.

When winter sets in top-dress with decomposed manure, cover well with marsh hay or other coarse material to prevent spring heaving by frost.

When danger of heaving by frost is over uncover and it perhaps would be well to remove cover and cultivate two or more times then place covering back for a mulch between the rows.

As to varieties to plant you must decide for yourself as locality and market perhaps would need to be considered.

The varieties that I will set are Crescent, Warfield, Rio, Wood, Enhance, Lovett, Wilson, Tennessee Prolific, Bubach, Gandy, for market and others for trial.

In summing up I would say, to succeed with the strawberry you must have good soil, good plants, and good cultivation, and remember never let your plants get hungry or thirsty, and the result will be an abundance of delicious fruit, health, and wealth.

DISCUSSION.

Mr. G. J. Kellogg: Mr. Ihrig says, in regard to the preparation of the soil, "Prepare a year before." Now you can not avoid the white grub if you do not prepare more than one year before. The white grub remains in the ground three years, and any strawberry field ought to be two years under cultivation before it is planted.

Mr. M. S. Kellogg: Does any one here know what success he has had with setting plants in the fall?

Secretary Herbst: Plants set the first of September with me have never made any runners to amount to anything, therefore, I cannot see but what he has got to set them pretty close in the row to get any crop at all from the plants he sets and he evidently gets a crop from the plants he sets in the fall.

Mr. Kellogg: Don't they run early next spring?

Mr. Herbst: Not enough so as to make any fruit.

Mr. A. J. Philips: Is it the opinion of any growers here that there is anything gained in fall setting of strawberry plants?

Mr. W. J. Moyle: I think occasionally strawberries can be set in the fall with the expectation that they will bear next season. It has been done on a small scale in our locality.

A Member: What per cent. of a crop may we expect from a late setting in the fall, Mr. Herbst?

Secretary Herbst: I have not planted on a large scale, that is simply an experiment I tried, and I would say that where you would get 200 cases from an acre set in the spring, you would probably get 30 or 40, unless you set them very close together.

Mr. Hatch: When should cultivation begin next season?

Secretary Herbst: Cultivate it just the same as you would new setting, only not as often. I should cultivate it once in the spring, just enough to break the hard soil.

Mr. Hatch: Those plants set in the fall would have a tendency to be growing a great many runners, and you would find great difficulty in removing your mulch.

Secretary Herbst: It is on the same principle as renovating old beds; you have those plants there, after you cultivate them, you have your plants to send out runners; you never fail to get enough runners, as a rule, unless it is very dry.

Mr. Philips: Would you get as good a plant from fall plants as you get from the spring plants next year?

Mr. Kellogg: Not if they fruited heavily, no.

Mr. L. G. Kellogg: I have had very little experience with setting in the fall, except with a few hybridized plants. I think it is a method that I should discourage, because I do not think it is practical, except possibly on a very small scale.

Mr. Harris: Is it practical to remove the mulch and cultivate in the spring?

Mr. Hatch: The growers at Sturgeon Bay have found it profitable, except on the old beds; the old beds that are kept for fruiting the second or third year are not cultivated, but the beds that we intend to carry over and renovate are always cultivated. We find it practical.

Mr. G. J. Kellogg: I believe those narrow matted rows,—hedge rows some are called, are far better than the wide matted rows.

Mr. Hatch: Is there any one practicing that? I notice it

is advocated by Mr. Kellogg of Michigan, is there any one practicing that here in Wisconsin extensively?

Mr. Kellogg: I do not know how extensively.

Mr. Hatch: The question was asked if there would be much influence if the space is narrow, if you stir up the soil after removing the mulch. Suppose your space is only one foot wide, and your matted row two feet wide, now can you have much influence on that row of plants by that soil cultivation?

Mr. Kellogg: You have just as much influence as you have room; if you have two feet you have just as much again as with one foot. I should hardly think it would pay to take off the mulch while there is only a foot of space; I would want more space anyway if I were going to cultivate again.

Mr. Hatch: Would you consider that you would get better results with the wider space than with the narrower space?

Mr. Kellogg: Much better results.

Mr. Gibbs: Whether it will pay to practice cutting runners out at all where they are grown for the market on a large scale I do not know, but the best crops of strawberries that I ever had was where I had set the plants in the spring, and as soon as the runners began to come out I cut them back, with the intention of cutting them all out, and I had followed that cutting of the runners perhaps a couple of weeks, when something occurred to take my attention off from them, and when I came around to look at my strawberries again I found that I had checked the tendency to run freely. It was only a half acre, but that half acre was the best growth I ever had, and I attributed it to the fact that I had kept the runners cut back until I had forced the plants to make good strong runners.

Mr. Phillips offered the following resolution: That it is the sense of this meeting that we as a Society do not favor the fall setting of strawberries.

An amendment by Mr. Kellogg that summer planting be also included in the resolution was accepted and the motion as amended was carried.

PICKING SMALL FRUITS.

By J. L. Herbst, Sparta, Wis.

It seems to me that the grower of small fruits is paying too little attention to this one factor of the business. Better and quicker returns would be received if more attention was given this part of the business. There was a time when small fruits could be placed upon the market in most any shape and bring a good price, but that time has passed, and the grower in order to secure ready sale and bring a good price, must place his fruit upon the market in neat and attractive shape, and as quickly as possible after picking.

In the first place be sure you have everything in readiness before the picking time arrives. Your crates and boxes should be all made up, and be sure to have them made properly; do not use any dirty, ill shaped piece of material in them. The appearance of the package has much to do with the sale of the article. Never use crates or boxes but once. The neat, clean packages, as a rule, sell first, even if the fruit is inferior. Your pickers should be supplied with a stand to hold not more than six quarts, and these should be covered, especially if picking strawberries, so that the sun will not shine upon the fruit. In cane fruit these can be removed and the pickers' stands be left in the shade. Engage your pickers early and be careful in the selection. Have them understand just what you expect of them and how much they are to receive for their services and in what manner. Do not engage boys, as a rule, but middle aged women and girls. As soon as you have discovered that a picker is slow or is not careful in the handling of the fruit or appears late for her work, let her go. Talkative and berry eating pickers should not be allowed. Some times you can remedy the eating habit by giving a liberal dose of chewing gum before starting them in.

I have found the following system very satisfactory in handling pickers. As soon as I have engaged my pickers and they appear for the first day's work, they are given a number and she goes by this number as long as she works. Her name and num-

ber are placed in a book; the man who has charge of the pickers carries this book. The picker is given a picker's stand, which holds six quarts, with a number corresponding to her number and she must use the same stand each picking.

In the morning the foreman starts the pickers, two in a row, or one, as the case demands it. As fast as they get their stands full they call their number and a tender goes and gets it, gives her check for same and brings it to the tables, same as shown, we have in the field. At this table stands a girl whose business is to put the boxes in crates. If in doing so she discovers berries in picker's stand No. 14 are soft, too green, or not picked properly, she reports the number of the stand to the foreman, who can remedy the trouble or let the picker go. The girl at the table puts the boxes in the cases properly and sees that all boxes are filled. As fast as the crates are filled they are drawn to the shipping house, and after another inspection, are nailed up and sent to their destination. We aim to get all fruit as quickly as possible to its destination, and never unless in case of accident, or late pickings, hold over night. The above system is used in both strawberries and cane fruits. The number of pickers taking a row of cane berries is placed at the head of the row, so in case the pickers finish and take another row, the foreman can tell who picked it, in case it is not done properly. The table shown here is a sample of the one used, and can be built by most any one. It is very handy as it can be moved from place to place, and after picking season is over can be taken apart and stored.

We pay pickers $1\frac{1}{4}$ cents per quart while picking and if they remain throughout the season are paid another quarter of a cent for each box picked, making $1\frac{1}{2}$ cents a quart.

In strawberries we try to get all one variety picked separately, or if two varieties are of about one color and shape, they are picked together. Light and dark sorts do not look well together in one box. We pick with a short stern and calyx as this gives the berry a much better appearance, and they stand shipping much better. Raspberries both red and black are picked in pint boxes, all others in quarts.

DISCUSSION.

G. J. Kellogg: I would like to ask Mr. Herbst how he arranges the numbers. The pickers' numbers correspond with the carriers',—when your fruit carrier picks up the fruit, does he have another of the same number, or how is that arranged?

Mr. Herbst: They carry an extra quart box in this carrier, and while he is emptying their carrier, she picks in this quart box.

Mr. Kellogg: He has to number those boxes then, or carry them in his mind; if he finds any defects he can not go back and take any orders unless they are numbered.

Mr. Herbst: He takes the picker's stand with the six boxes that are numbered in to the girl that is at the stand.

Mr. Kellogg: And she has another box of the same number?

Mr. Herbst: No, she looks at those boxes while he is there; takes them out and sets them on the table; if they appear badly picked or not in proper shape, she takes that number down.

Mr. Kellogg: Your picker does not go to the stand?

Mr. Herbst: No, the tender goes to the stand.

Mr. Kellogg: I should think you would get them mixed up.

Mr. M. S. Kellogg: How many pickers can a good overseer handle under those conditions, if he has to take the carriers to the table himself?

Mr. Herbst: The overseer has nothing to do with the carrying of crates. We have boys to attend to the carriers; we have sometimes half a dozen of them; it all depends on the number of carriers, one boy can attend to about fifteen pickers, by carrying four of these crates at a time.

Mr. M. S. Kellogg: You practice picking berries for shipment before they are dead ripe; that is, before you would pick them for the home market?

Mr. Herbst: Yes, we do; we like to pick them a little green for shipment.

Mr. Hatch: Mr. Herbst, in the matter of packages, are you using 16-quart or 24-quart cases?

Mr. Herbst: Sixteen quarts.

Mr. Hatch: Is there any advantage or disadvantage in using any other size?

Mr. Herbst: I think if you are sending to the commission man you get better results by using 16 quarts than 24.

Mr. Hatch: Did I understand you to say that you were picking your raspberries into quart boxes?

Mr. Herbst: No, in pint boxes.

Mr. L. G. Kellogg: Black and red, both?

Mr. Herbst: Yes.

Mr. Hatch: Have you found them ship as readily and as well, or to what extent are they shippable as compared with strawberries?

Mr. Herbst: Well, the raspberries of course will not stand the shipment that the strawberry will. There are some varieties, however, that carry very well, will carry all right to Minneapolis. I do not know as they are any different in carriage from strawberries in boxes.

Mr. Hatch: Will you mention some of the varieties with reference to their shipping qualities?

Mr. Herbst: The Nemaha or Gregg black raspberry will stand shipment better than the Older raspberry; the same with strawberries, the Warfield will stand a better shipment than a soft berry like the Bubach, although the Bubach can be carried to Minneapolis. In the red raspberries, the Marlboro and Loudon will stand a better shipment than the Cuthbert.

Mr. Smith: I would like to ask how many boxes of strawberries the average picker will pick in a day.

Mr. Herbst: The season that we had such a tremendous crop, one of our girls picked 158 quarts, the best that was ever picked; but the last few years they have not picked more than 80 quarts, and then they have only picked about five hours.

Mr. Smith: You pay a cent and a quarter a box?

Mr. Herbst: A cent and a half when they are all paid up. For raspberries we pay two cents a quart or a cent a pint.

Mr. M. S. Kellogg: Is it not an advantage to the grower a great many times to secure his help and pay him stated wages by the day for doing his picking, rather than by paying him by the quart?

Mr. Smith: Do I understand then that your pickers average \$1.20 a day for five hours' work?

Mr. Herbst: Yes.

Mr. Smith: What do you pay your men?

Mr. Herbst: The boys that attend to the pickers get fifty cents a day.

Mr. Smith: The men, the field hands?

Mr. Herbst: The field hands \$1.25, but they would rather work for that than pick berries.

Mr. Harris: The trouble with the men is, they cannot pick that many strawberries. I have two girls who picked for me the past year who picked over 100 quarts in about six hours, and grown men could not begin to do that by doing their best.

Mr. Moyle: I would like to ask Mr. Herbst why he prefers the girls to the boys in picking strawberries?—there must be some reason.

Mr. Herbst: We prefer girls for picking because they will stand the picking much better; they are not so talkative; they do not get tired and want to go, and as a rule will attend to business a good deal better than boys will.

Mr. Barnes: I think our friend Kellogg has suggested a very sensible idea of paying our pickers by the day according to their merits. Paying them for so many boxes encourages dishonest picking and handling.

Mr. Franklin Johnson: I feel that the writer of this paper is correct in that the picking of the fruit is one of the most difficult operations. There is one thing that you spoke of that I would like to have explained more fully,—that is, as to the dismissal of the picker. At what point do you dismiss them? What chance do you give them to correct themselves?

Mr. Herbst: We do not tell them more than three times to remedy anything. We give them plenty of chances to correct themselves.

Mr. Johnson: I think sometimes growers dismiss their pickers almost too soon. There are certain things for which they should be dismissed at once. For a clear case of dishonesty I think they should be dropped. Now, in regard to paying for boxes, I never find that the case; the most rapid pickers are usually the best ones.

Mr. Smith: I think there is one point that you overlook here in the matter of discharging pickers. The point should not be just how quickly, or how many times it is necessary to show a picker, as the willingness of the picker to learn.

IMPLEMENTS OF SMALL FRUIT CULTURE.

By A. L. Hatch, Sturgeon Bay, Wis.

The implements required to prepare the ground for small fruit culture are such farm tools as are required for ordinary farm crops. This is fortunate since small fruit culture is a supplemental business upon most farms, and even where made an exclusive business it is less expensive and trouble to get tools in common use than to get those less common. In my own practice I have found the disc and smoothing harrows almost indispensable to finish the soil previous to planting. For drawing under and covering rubbish, incident to heavy manuring, the disc harrow is especially adapted. The Acme harrow is also a splendid implement for this purpose, and where the soil is stiff and lumpy, will do superior work in fining the surface, second to that of no other tool. However, where lumps are to be crushed, the common homestead planker will do very well if no roller is to be had.

One of the newer implements that has been a comfort and real help is the weeder. The one I have runs with one horse and has spring teeth, something like a common horse hay rake without wheels. I not only found it a great labor saver when used as a weeder as intended, but I put it at two or three other kinds of work that it performed very satisfactorily. During the winter I had some barnyard manure hauled while it was frozen. This spread upon the field was quite lumpy in the spring, but by running over it with the weeder it was broken up and spread quite evenly. In removing the winter mulch from my strawberry beds, I used it again to gather up straw. This did the work much better than the spring-tooth horse rake, as it did not catch and tear out the runners as the rake did. After the mulch was off I had the weeder run over the

beds once or twice and thought it was a benefit. After the new beds of strawberries were planted, I went over them several times with the weeder, and where the plants were planted low enough in the ground and the surface was free from rubbish, it did fine work. On a field of beans and one of corn and potatoes I ran the weeder until the plants were well started, even the beans not being injured when having four good-sized leaves. Indeed, I kept the weeder busy on about twenty acres the past season and am satisfied that it is, when properly used, one of the greatest labor savers to be had.

Among the smaller tools for small fruit culture there is nothing today that is more useful and convenient than the triangular hoe, introduced to the public by me, upwards of twenty-five years ago. It is simply a good, broad-bladed, common hoe with the upper corners removed from the shank to the outer corners of the cutting edge. For close work around small plants and under overlapping foliage, for loosening the soil and removing weeds next the plants, it will save more back-aching work than any other form of hoe.

For cultivating among strawberry plants, a fine tooth, expanding cultivator is best; I have used the Ajax or Iron Age for several years. It is an all steel implement, and has the advantage of doing just as good work as the Planet, Jr., and is much cheaper. The leveling attachment of the latter implement is all right, but not so important as to be used even by those who have it.

My raspberries are planted eight feet apart so the cultivation can be done with a two-horse lever spring harrow. This is a very rapid way to cultivate, and since the levers adjust the teeth as desired, the work can be well done at any depth up to six inches. When winter protection is given to raspberries, it is necessary to remove the old bushes before fall. I have used various tools for this purpose, and find that the most of the long-handled pruning hooks cut so many of the new canes that they are not safe in the hands of ordinary laborers. Better work can be done with long-handled, short-bitted shears, or with the common pruning knife. At Sturgeon Bay we have not protected our bushes and the removal of the old bushes does not seem to be essential. Indeed, two years' trial of

leaving the old bushes shows much better results in leaving the dead bushes right where they grew.

There are some implements that may be used in small fruit planting, such as markers, dibbles, etc., that each planter will make or modify according to conditions, existing soil, and their condition making some difference in procedure.

To protect small fruits from fungus diseases would require prompt work from the very beginning of the plantation's growth. For bush fruits the universal nozzle rig of Morrill & Morley is probably the best thing now out, and ought to do the work as efficiently as desired.

Mr. Barnes: I would like to ask Mr. Hatch in regard to the use of the weeder.

Mr. Hatch: It is an implement that we have used very successfully in small fruit culture. Here is the point: If the ground is hard, the weeder is not going to take hold, but in a strawberry plantation, if you can set the row in a slight depression, so that the crown of the plant is not above the surface, you can run a weeder right over and keep that fine so that the weeds that you have to contend with will be simply in the seed leaf, you are not going to injure the strawberry plant at all; but if your ground is not in fine condition, and your plants are not set firmly and deep enough, your weeder will not help.

Mr. Barnes: Suppose your plants have developed a large amount of foliage, does it not pull them up?

Mr. Hatch: No, especially if you set with Mr. Coe's dibble, or with the spade—that is a good way—it does not pull them out, unless you set them too high. I at first did not make a success of the weeder, but when I got down to using it in the right way, I think I went over my strawberry bed as many as four times. If you wait till the surface gets hard, or if your weeds have got beyond the seed leaf, it is too late, but keep it going. You can go over ten acres a day with a one-horse weeder.

A Member: I understand you run it over as though there were no planting?

Mr. Hatch: Yes. Suppose you have got five acres and there is a good deal of litter, put in a good day's work preparing that ground and getting that litter and rubbish off. Do not think it will do until you have got the rubbish all off, all scratched and all fine; then take your weeder and work it and be happy.

A Member: What is your soil? Is it clay, loam or sandy soil?

Mr. Hatch: The soil is light, friable soil.

The Member: You think the weeder would work as well on a stiff, clay soil?

Mr. Hatch: Now, then, I should begin by preparing the soil for that, and I should not expect it to do so good work under circumstances in which you had a beating rain and moisture that would not allow you to work it immediately afterwards, but I should prepare that soil by giving it a good crop of clover.

Mr. Latham has asked me in regard to the shape of the tooth. The upper part of the tooth is about an inch wide, and, say, about $\frac{1}{8}$ inch thick, perhaps $\frac{3}{8}$ inch thick. The upper part is flat and runs plow-wise toward the row, so as to give the swing, and the lower part is doubled together and makes a point about the size of my little finger; it is sharp-pointed, and it has the swinging motion that makes them work along that way (indicating); they go wiggling along, and I was surprised and astonished to see that they did not injure my strawberries or my beans when they were up a considerable height.

Mr. Edwards: Mr. Hatch, we have had a Halleck weeder for several years; I think it is one of the best tools in the world, and I can endorse everything you say. But I tried it among apple grafts and I thought it damaged the sides of the little trees, that is, the second season after they were planted. Have you ever tried it?

Mr. Hatch: No, I never tried it with apple grafts, because they are of such nature that you cannot use it to advantage.

Mr. Edwards: The whole secret in the weeder I think is

in killing your weed before it grows to be secure; you cannot do anything with it if it gets any size.

Mr. M. S. Kellogg: In using the weeder, you say a man can cover ten acres a day; how much can a man cover with a single cultivator?

Mr. Hatch: Using a single cultivator he must go twice in a row, and a man would do much less, probably four acres.

Mr. Kellogg: We had a man that would cover four and one-half acres a day, going twice over a strawberry plantation. Of course he had a good horse and walked right along.

Mr. Hatch: There is another point in regard to small fruit culture. At Sturgeon Bay, in cultivating our bushes, we use this two-horse spring cultivator right between the rows, and we find another great help in planting them at such a distance that we can drive right through with the wagon and put in loads of manure, and I have found that a good method of manuring right along the rows, and the spring cultivator will fine it up and it works very well.

Mr. Barnes: On that question of cultivating small fruit plants, I use the Planet, Junior, and I went to the blacksmith shop and had two little scissors made, something like what you have described, which I attached in place of the two hind teeth, and they run right along tracing behind the cultivator, from one inch to two or three inches below the ground, just as you want them. It costs about 50 cents to make the two, and they do the finest work and most efficient cultivating I have ever seen. They are not patented; I think the idea originated with my neighbor across the road.

Mr. Kellogg: We have practiced in a measure the same principle, although we have used it by getting the wide teeth that are made by the cultivator concern. They are somewhat like a wing nose (?) at the center, and average in width anywhere you want. We have some of them which are fourteen inches each way from the center; putting those on the cultivator with one scoop, you leave a perfectly clean track behind.

FRUIT FOR THE FARM.

By W. L. Ames, Oregon, Wis.

I apprehend it would be a much easier task to exhaust the fruit itself on the majority of Wisconsin farms, than it would be to exhaust the subject of "Fruit on the Farm," and especially in the brief time at my disposal here. Then, for two reasons, at least, I shall hardly expect to address this body exhaustively on the subject assigned me. The reasons are: First, lack of time; second, lack of ability. But in the short time at my disposal here, I shall hope to prick gently here, and tack a nail there, with the purpose and hope of possibly farthering, in a slight degree, the realization of the wording of my topic. Were I a horticulturist, I would be but a theorist on this subject, but being the next best thing to a horticulturist, viz., a farmer (though enjoying the honor of a life membership in your worthy body), the thoughts I express will be from "right up against the subject." While I honor my occupation, and should probably again follow it, if I had my life to live over, yet were my slight experiences with fruit entirely eliminated from it, one of its most pleasing attractions would be left out.

Operating, as it is my pleasure, one of the best farms in southern Wisconsin, of nearly 400 acres, and all with the help of only one man, and the school vacation time of my nephewson, the lack of time to at all thoroughly cultivate fruit, is, with myself, as with the majority of farmers, the one great handicap. It is needless to state to this body of men, that to be successful with small, or berry fruits, attention to them is needed at quite regular and frequent intervals. Lacking time and ability in the cultivating season to thus regularly serve them, has led me to indulge more freely in the tree, bush and vine varieties, and especially in the former, to the extent that with the frequently expressed observation of others I venture to believe that we have as promising, if not the best orchard, that exists in our locality. My setting of 100 or more fruit trees consists of apple, including crabs, pear, cherry and plum. Per-

haps much of the simple success that has attended my efforts in tree planting is due to the fact of living within two miles of a most reliable nursery, viz., "The Dane County," F. H. Chappel, proprietor, where I could go for what I wanted (and if I did not know Uncle Frank could surely post me), and in a few hours have them again transplanted to mother earth. From the above nursery I have frequently accepted large young trees, eight to ten feet in height, and transplanted them at home with success, and with early bearing varieties, had them fruit within a year or two, and continue from that on. In the main, I consider that my success has been very good with large size young trees. Before my time for tree setting on my own responsibility, there had been set in our present orchard, a few trees, including the old and reliable Duchess, some of the russet families, the Fameuse, which, when it came to bearing, turned out to be a Haas; the Walbridge and the Utter. Of the Walbridge, unless there are better specimens than ours, its claim to excellence is not great. It is, however, a bearer, and its fruit preserves well, but for dessert it must stand low, hardly being worth a nurseryman's recommend on any other than the above favorably mentioned points. Possibly the family from which our might have been grafted was not what it should have been. Of the Utter, I cannot speak too highly. Of our bearers, to date, it is one of the par excellent; trees hardy, fruit large and beautiful, and with quality to fully equal its exterior. I believe I have never seen our best samples equalled in your very creditable exhibits of that variety in this building. Its flesh approaches nearest that of the pear of any apple I have ever tasted. It has borne very freely in all apple years for the past twelve or fifteen years, and, today, while an occasional Duchess shows signs of decay, the four Uters are as rugged as ever. Fruit keeps well to and into February. While in our new settings the Transparent family is well represented, yet a mature Red Astrachan always gives us our first ripe or eatable apples, and I am almost inclined to say, our best. It is certainly worthy of perpetuating, and I am setting young trees of this variety and hope they will prove as good as the old tree. While to produce apples for market at some future time is the least of my ambitions, yet to have a good sup-

ply for home use and lots to give away, of first quality apples, is one of my most pleasurable ambitions. As for "home use" has been my principal aim in fruit propagation, our setting of young trees consists of quite a variety, but not one included but that I know from past observation or else has been strongly recommended by some of you reliable nurserymen. Varieties include, of those familiar to me, Utter, Red Astrachan, Seek no Farther, Paradise Winter Sweet, McMahan, Terwilliger, Murphy's Greening, Murphy's Blush, Custer's Sweet, Dick's Seedling, and Fameuse. Those set by recommend: Dominion, Longfield, Northwestern Greening, Transparent, Whitney, Wealthy, Roman Stem, Wolf River, Louise, Ever Bearing, Jersey Pippin, Belle Pippin, Twenty-ounce, Mammoth Black-twig, Cross, and Barloff Sweet. The Tetofsky, a good apple, bears well with us but drops its fruit suddenly just before maturity. I hear that the Wealthy has the same reputation. Is such the case? Our orchard is in sod, except that it is never allowed to bind the trees, being kept at a respectful distance by chip dirt, ashes and occasional straw mulch; also by occasional spadings and forking around the trees. Young trees set leaning quite acutely to the southwest. The Barloff Sweet, just coming into bearing with us, is a beautiful tree and apple, and with quality fully equalling its beauty. It is an early apple.

Represented in our dozen pear trees are the Sheldon, Keifer, Vermont Beauty, Wilder's Early and Wordensekel, the Sheldon only yet having borne a creditable specimen. The young trees seem hardy and are yet doing well. Late Richmond and Montmorency cherry constitute our only two varieties in that line. The former blossoms much more freely than it fruits. The latter, although the younger trees, bear the more creditably. Of plums, the Robinson, DeSoto, Moore's Arctic, Hawkeye, Damson and Tatge have found a place in our settings, few or none bearing yet. With all these, the battle with the enemies is the next thing. But of apples we have had an abundance, apple years, and at a cost far less than the pleasure, comfort, health and luxury that we experienced from them.

Of grapes we harvested a bountiful crop the year before they all winter-killed, viz., in 1898. I at once reset of Concord,

Worden, Moore's Diamond, and Campbell's Early, but dry and hot weather have prevented the thrift that characterized the old plants; but having once tasted them to our fill, we'll never give up till we have them again. Of raspberries and blackberries, a certain secluded wood lot on the place, where their roots are continually mulched with leaves and mold, furnishes us a liberal supply. But, alas, for the year past, when in a day, after a few bounteous pickings, the extreme heat roasted and blasted the remaining bushels and bushels on the bushes, causing us to wonder and wonder why God should so nearly mature such luscious specimens of fruit and then dash it to destruction in a day. We have Older and Loudon set in the garden, also a liberal supply of currants; Red Jacket and Downing gooseberry bushes furnish us their fruit in abundance, when the canker worm doesn't get the start of us. We have pie and wineplant in abundance. The pesky "cheese plant" so infests our, to date, available strawberry ground that I am ashamed to admit the nearest a failure in producing a home supply of that fruit of any date. That does not mean that we go without strawberries, for we have them freely from first importations to the end of the home produced. The seeking of comparatively new ground for this fruit, as also, possibly, for a garden, I apprehend is the nearest remedy.

So much for our ideas and experiences of "Fruit on the Farm." Now then, first, is there any practical way, barring rank disaster, of dividing the surfeit of the apple crop of one year with the probable deficit of the next? Second, are nurserymen careful enough in selecting their scions that are to be the future fruit trees, from good representatives of the variety they propose to perpetuate? Third, are nurserymen conscientiously careful about recommending varieties of apples to fruit novices like myself, which, if they ever come to bearing, will be but a disappointment to those who have set, cared and worked for to that auspicious time? Such fruit as I have proven accessible to the farmer at his own hand, I consider many times worth its cost.

Mr. Edwards: I would like to ask of Mr. Ames if he would recommend to others the planting of such large trees as he spoke of as a practical thing to do?

Mr. Ames: To others in my vocation. Well, it certainly has this advantage: it shortens the distance a long way between the tree that is down here, and the tree that comes to bearing.

Mr. Edwards: I simply know that my success with a good, large young tree has been equal to my success with much younger or smaller trees.

Mr. Barnes: I hope you know that friend Ames lives but three miles from the nursery where he grows his trees. You must not think you will have equal success in securing trees two or three hundred miles away from you.

Mr. Philips: In reference to the Walbridge, gentlemen, we have abused the Ben Davis and the Walbridge more than any other two apples in our state, and if it had not been for those two varieties in the northwestern part of the state, there are hundreds of farmers that would not have any apples this year.

Mr. M. S. Kellogg: Talking along the line of dissemination of trees that are true to name, I think the great trouble has been in the past that the nurseryman's products pass through too many hands before the planters get them.

Mr. Gibbs: It is undoubtedly true that certain of our apples will do very well and give very good satisfaction amidst certain environments, and will fail without those environments, and I have seen enough of the Walbridge myself to be satisfied that, to do the apple justice, you must find out what environment it wants and place it there.

Mr. G. J. Kellogg: There is a certain difference between Duchess, a certain difference between Wealthy. Now, are we propagating from bearing trees that we know are a success?

Mr. M. S. Kellogg: The paper touched slightly on the subject of whether there is not some way to divide our apples and not have a surfeit one year and a scarcity the next. I think the subject of thinning our trees, thinning both the apples and the trees too, to make the fruit buds more even and distribute them over the two years, will answer that question in a measure.

AFTERNOON SESSION.

Mr. Jonathan Periam of Chicago, on motion of Mr. Edwards, was made honorary member.

HOW TO CARE FOR THE ORCHARD.

By Edwin Nye, Appleton, Wis.

I would first plant my orchard. I would plant the very best young, healthy trees I could get, and of the best varieties. I would have my ground in as good condition as I would if I wished to raise a premium crop of any kind. Then I would plant my trees carefully, cutting away all bruised and broken roots and superfluous tops. I would set them in straight rows, and at proper distances apart. I would mulch the ground around the trees and plant corn, beans or other hoed crops between. I would hoe and cultivate thoroughly, keeping the ground mellow and the weeds under. I would watch and work from day to day; if a bud or twig appeared where I did not want it to grow, I would pinch or cut it off. If a worm or insect came to prey upon or eat my trees, I would kill the worm and crush the insect. If an unruly steer got in, or from any other cause a tree got wounded or bruised, I would carefully cut away the broken or wounded part, painting it over with liquid shellac to exclude the air, giving the tree a chance to start again. I would keep the steer out after that. If a rabbit or mouse came to injure or gnaw my trees, I would kill the rabbit and the mouse.

I would keep up this watch and care and cultivation year after year. I would keep the soil in good condition by the use of fertilizers, and also by plowing down clover and other green crops. As the trees got larger I would occasionally pasture these crops with sheep or swine, watching carefully that they did no injury. As the trees grew and came to bearing age, I would double my diligence to kill every injurious insect or worm. I would cut out every dead or superfluous branch,

every blighted twig. I would watch for fruit bud and blossom and for the growing and ripening fruit, and as it began to color and ripen, I would invite my wife and friends to taste and admire it. And now this fruit is carefully gathered and stored in the cellar, it may be you will find a barrel or kegs of cider stored there also.

Then imagine this man who has labored and watched and waited all these years, seated of a winter's evening with his family and friends around the hearth before an open wood fire. It may be the fire is made from the dead body and branches of an old apple tree. There is a mug of cider on the stand; also a large pan of apples. Think of this man's feelings if he has nothing better to set before his friends than the hardy "Ironclads" of the northwest!

Let us raise more apples good to eat, and fewer for show.

Mr. Philips: Did I understand you to say that you put quality before hardiness?

Mr. Nye: I would, yes, for a home orchard.

Mr. Wyman: What do you plant?

Mr. Nye: I plant Tallman Sweet, and for early winter and late fall I plant Wealthy.

Mr. Philips: Don't you plant the Northwestern Greening?

Mr. Nye: I am not acquainted with the Northwestern Greening. I have not planted it.

Mr. Wyman: I had a nice lot of Wealthy this year, but I could not find one solid apple to bring to this show here.

Mr. Nye: It is not really a winter apple.

Mr. Wyman: It is an early fall apple with us; it ripens in October. In other places it may be different.

Mr. Wyman. Do you select an elevated site, where you have good root and air drainage?

Mr. Nye: Certainly.

Mr. Gibbs: I would like to say in regard to the Northwestern Greening, that I have watched that apple with interest since 1883, and I have been glad to see a gradual increase of the number of plates of that apple at the various fairs that I have attended.

Mr. Wyman: What time of the year do you advise pruning trees?

Mr. Nye: Prune them any time from February to April or May.

The President: How much pruning?

Mr. Nye: Well, if the orchards have had careful pruning from the start, it does not need any great amount of pruning at any one time?

Mr. Kellogg: Is not May too late to prune?

Mr. Nye: It may be, except for pinching out the young growth.

The President: I would like to ask: providing your orchard had not been pruned properly from the time of its planting, and the trees had become a good size, what course then would you take? would you prune severely or not?

Mr. Nye: I would not cut out so much at once. I would prune out the limbs that required the most pruning, and leave some for another year perhaps, not give the tree too severe a cutting at once.

Mr. Edwards: Mr. Nye, would you have a low top tree, or have it trimmed up head high?

Mr. Nye: I usually prune my trees low, that is, comparatively low. They are less subject to the wind. There is one disadvantage, in that you cannot cultivate and work close to them; still, I think I prefer a low top tree.

A Member: How low from the ground?

Mr. Nye: It depends on the variety. With some of my Tallman Sweets, for instance I have to get on my knees, almost, to get under them, they are so spreading.

Mr. Irving Smith: I think there is one general rule which may be applied here in pruning almost any manner of bush or tree, which will if we apply it, help out very greatly; that is, do not have any two limbs rubbing together; do not have any two buds on a tree touch.

Mr. Abbott: When trees are liable to overbear, is it not a good idea to thin the fruit by trimming more or less when the trees are in blossom?

Mr. Nye: In pruning late in May, for instance, I pick out the trees that are budded too full, I try to thin the fruit buds

by pinching them out and cutting them out, and cutting out branches where they seem to be too thick.

Mr. Tarrant: Is not there danger at that time that the sap will run out when you are cutting?

Mr. Nye: Not on small twigs.

Mr. Tarrant: They will have to be very small then.

Mr. Kellogg: I would like to ask Mr. Tarrant when is the best time to prune?

Mr. Tarrant: Well, my idea is, in March and April, before the sap starts much. It is well enough to prune some in the summer time, but I have never practiced that much. You can rub off the shoots, or cut some off, but they sprout up so quickly again.

Mr. Neilson: May I ask about fall pruning? Does that pay at all?

Mr. Nye: I have never practiced very much fall pruning. I do not know as it hurts very much; especially, if you put something over the wound, I do not think it hurts at all.

Mr. Pearson: I would like to ask Mr. Periam what time he prunes his orchard.

Mr. Periam: I dislike to exhibit my knowledge among nurserymen; I came here to learn. However, I will say I trim in March, usually.

Mr. Philips: I do quite a little pruning any time during the summer, whenever I find a limb that needs to be cut out, but I never cut a limb over half an inch in diameter without coating it with grafting wax; it costs but very little.

COVER CROPS FOR OUR NURSERIES AND ORCHARDS.

By M. S. Kellogg, Janesville, Wis.

Mr. President, Ladies and Gentlemen:—The discussion of this topic is of vital importance to all those who grow fruit, either for commercial purposes or for home consumption, for to do so they need Wisconsin grown trees to start with if they are to succeed in the highest degree. The extremely se

vere winter of 1898-99 made it very apparent that the commercial tree grower must take some other measures for protecting his young growing stock than by depending on bodies of snow, or else must suffer loss occasionally by winter root-killing. All of our growing stock of fruit trees at Janesville was either killed outright by the severe winter referred to or was so badly injured that it never fully recovered.

The following fall, when the ground froze sufficient to bear team and wagon, we began mulching our one-year-old grafts with stable manure, and in doing so I believe we saved them, although they were somewhat injured; since that we endeavored to secure the protection necessary through growing some cover crop. In this work we have used such crops as buckwheat, field peas, buckwheat and peas together, rye, millett, rye and millet together, sand or winter vetch in combination with millet and rye, and oats. Of the foregoing we have grown the best covers with the sand vetch and with rye.

During the summer of 1900 in a plantation of one-year-old grafts, we sowed sand vetch and secured a good catch; it made a good growth, and aside from two objections, is the best cover we have used. The first objection is, that you are not always sure of a stand, as we have since sown vetch and got—left, and then put in rye and got a good growth before winter. The second objection is the tendency of the vetch to climb the young trees and pull them over, deforming them for all time. The seed is also high priced. The same summer we used peas and buckwheat in two-year-old plantations, supplemented with stable manure. This two-year-old block of trees was on prairie loam soil sloping to the south and east, one side of which is rather light soil inclined to be gravelly. From this block of trees we dug and placed in our cellars last fall about ten thousand trees, and fully one-half of the block is still standing.

Next in value to vetch we name rye; it is cheap seed, easily grown, you are almost always sure of a good stand, grows late in the fall, and we have found it a good cover crop. However, we may know more about it in six months, as we have several acres of it in our young trees, and it is by far the heaviest growth we have ever had. Seed was used at the rate of about

four bushels per acre, and it has made a fine growth, being eight to ten inches high, and now as it mats down on the ground, proves a very decided cover. One thing, however, must not be lost sight of in using rye as a cover crop either in the nurseries or in the orchards, and that, is that it must be cultivated out before it makes much of any growth in the spring, or it will take more out the the soil than it returns. This may be a good way to spur the careless nurseryman or orchardist (but of course there are none such at this meeting) to cultivate his trees early.

The cover crops for the orchard should be sown from the 10th to the last of July. Those for the nursery we have practiced sowing from July 20th to August 15th to 20th. In either instance the weather will govern the exact date of sowing. In sowing the cover crops in our nurseries, we have used a hand seeder and followed the cultivator, and in turn have followed the seeder with a planker to smooth the rows and pack the soil on the seed.

That we must grow cover crops goes without any argument, but just what crop we shall grow is still an unsettled question. Prof. Taft of Michigan believes oats to be the best cover crop for the orchard, but that does not necessarily mean the best for the nursery, for the orchard crop is intended for a mulch in the spring and must be a crop that does not grow rampant early in the season, while the nursery cover crop is turned under as soon as the cultivator is started and should add fertility to the soil.

In selecting a cover crop, we should consider the following points: We must have a crop that grows quickly, covering the ground completely; one which is reasonably sure to catch, one year with another; one that the seed is not expensive, and if possible one which will add something to the soil which will aid tree growth. As these crops are sown in a usually dry season of the year, the clovers are not to be considered very seriously, as they are uncertain of germination and slow of growth. Above all, whether in orchard or nursery, cultivate the crop under early and then cultivate, cultivate, cultivate; retain all the moisture possible with a dust mulch, and aid in avoiding drouth.

In closing, would say: do not depend on any one crop; have two strings to your bow, and if one fails use the other till the first one is repaired. There is no one crop which will uniformly succeed, and each one will need to do some experimenting for himself to determine just what is best for his needs. The Experiment Stations in the different states are doing work along this line and we must look to them to tell us what crop is going to add the needed humus and tree growing matter to our very diversified soil; the average nurseryman and orchardist has not the facilities nor the time to experiment to determine what is lacking in his soil.

Mr. Marshall: I should like to ask Mr. Kellogg if he thinks it is better to sow the cover crop the first of July than it is the first of September. I think from the middle of August to the first of September is best with me; I get plenty of cover and get about six weeks' more cultivation.

Mr. Kellogg: The object in sowing the cover crop in the orchard earlier would be to aid the checking of the late growth of the trees, and prevent possibly winter killing later from unripeness.

Mr. Hatch: I would like to put the question this way: Now, the orchardists have an idea that some time or other they want to put their orchard into clover, they want to add some nitrogen to the soil, or they want some nitrogen-gathering plant, and I have had conversation with some men here that are going to do that as quick as they can. Now, assuming that this is done and that they are ready to plow under the crop in the orchard, which is the method they all want to pursue; now they plow under the crop that they get, either the first or second crop, the question arises, what shall they do immediately after that with the ground until the fall?

Mr. Barnes: As a cover crop, I find that barley will come close to filling the bill. Barley will germinate and grow with less moisture than almost any of the small grains; barley will winter-kill always, so we have not got to root it out or kill it in the spring.

Mr. M. S. Kellogg: Along the line of returning nitrogen to the soil, there has been a good deal of experimenting done in regard to planting clovers in the orchard for this purpose, but for lack of moisture the seed has failed to germinate. The vetch seed which was sown with such marked success for one year was sown, if my memory is correct, after a pretty good rain; there was a fair amount of moisture in the soil. Under very dry conditions the vetch would not germinate very much better than some of the clover, but the vetch seed is a larger seed than the clover, and in my opinion would produce a crop that would return nitrogen to the soil with perhaps the seed itself.

Mr. Pearson: I think rye is not a very good crop to sow in an orchard or anywhere where you can not plow it under readily in the spring. I have found it is a very hard weed to exterminate, and I always try to save myself all the labor I can, so I have quit sowing rye as a cover crop except in an open field.

Mr. Periam: We must recollect always in relation to cover crops where clover is concerned, that it is a crop that dies out of itself naturally the second year, especially the heavier growth, what they call cow grass. Now if we sow clover we must sow it in the spring, but it makes very little growth until about the middle of July, when it begins to grow and will cover the ground in Illinois.

Mr. L. G. Kellogg: At the Wausau station we have had one year's experience with the vetch which was not at all satisfactory. It made very slow growth, and I do not believe it can be relied upon in the State of Wisconsin as a cover crop for orchards.

Mr. Elliott: Has any one had any experience with alfalfa as a cover crop?

Mr. Marshall: I never have had any experience with an alfalfa cover crop, but I have tried two years to grow it and it has winter-killed both times.

Mr. Elliott: In Minnesota we have what is called the Swedish variety that is doing admirably well, and I notice in the Orange Judd Farmer recently one instance where they had used the alfalfa with very good success as a cover crop.

The President: I think alfalfa is very slow to start, but af-

ter it is once established it does very well in our section of the country.

Mr. Kellogg: Is it not true that when you get alfalfa established it is very hard to up-root? The remark was made that it was hard to grow rye; you want to get after it and keep after it; you do not want to let it get to any size at all, turn it under.

Mr. Periam: It takes alfalfa at least three years to get it rooted; it lives in the ground indefinitely, and if the soil is very porous, with gravelly bottom and dry soil, alfalfa is a great crop where it is natural to the climate, but I do not think anybody need to experiment with alfalfa as to any soil that will grow red clover.

Mr. G. J. Kellogg: The question of alfalfa was pretty well ventilated at Milton Junction last week and those who have grown it the longest and the most acres say that it takes a four-horse team and a breaking plow,—the roots run down 20 feet, and they are like a burr-oak, it is a terrible thing to get at when it is thoroughly well established.

Mr. Nye: I would like to endorse what Mr. Hatch and the other gentleman said in regard to the field pea, I think it is *the* cover crop.

Mr. C. E. Bassett, Secy. Mich. State Hort. Society, was on motion of Mr. Edwards elected honorary member and invited to take part in the discussion.

Mr. Bassett: The experience that we have had has been that fruit growers as a rule go to extremes. We went from one extreme to another; our first extreme was perhaps a lack of cultivation, and from that extreme we went to the other, which was such intensive cultivation that we would not allow anything to make its appearance in our orchards except the plants, vines and trees which were intended to be there. The cover crop answers a two-fold purpose. First of course to return that certain amount of humus or fertilizing qualities that are in these plants to the ground, and also to act, as the name implies, as a blanket or cover to protect and hold out the frost. Where you can get a good catch of clover I believe there is nothing as good, and we will all agree on that, I believe it is a generally accepted principle, that if we can get the clover that is all well and good,

There is one question I would like to ask, because it is one I hope to get some information on, and that is, the advantages of a cover crop in your strawberries.

Mr. L. G. Kellogg: I have never practiced sowing a cover crop on strawberries and I have never heard of any one in the state of Wisconsin that has practiced it. I do not believe any of our members have; if they have I would like to hear from them; if it is practical it is a very easy way of covering strawberries.

Mrs. Johnson: A great many years ago Nature gave our strawberry beds a cover of clover and it was not a success.

Mr. G. J. Kellogg: I never practiced sowing oats, because I do not think it is the proper way to do; but a neighbor of ours very near Janesville, who is not now living, practiced sowing oats for acres and acres for cover crop. It is the easiest way you can get the mulch on, the easiest and most even and one of the best protections, and I would not see any objection to it, unless our President has a better way we will cover them with clover and weeds.

Mr. Curtis: Down in Missouri the question of material for covering strawberry beds came up, for the reason that there was a scarcity of straw and stuff there, and so they went to work and sowed buckwheat, and cut it when it was green, using that for covering their big acreages of strawberries.

The President: When I say it is not practiced at all in Wisconsin practically, in very few instances anyway, I say about the truth. We will pass now to the next subject.

IMPLEMENTS FOR ORCHARD CULTIVATION.

By L. G. Kellogg.

Mr. Kellogg: I have prepared no paper on that subject, for the main reason I have had but very little experience with implements for orchard cultivation outside of the general farm implements. I did not feel that I could consistently prepare a paper upon this subject and intrude upon your time.

Mr. Hatch: I hope the subject will not stop right there.

There have been introduced lately some new implements designed specially for orchard culture; among these are the expansible or expanding harrows, run with two horses, held in such a way that they can be widened out and do the work underneath the trees quite a considerable distance beyond the horses. Those are, I think, the Acme harrow and the Cut-away harrow. There is also I believe what is called the California orchard cultivator. It is a cut-away disc harrow, made to run five feet one side of the team. One thing that impressed me in visiting Michigan as a delegate two years ago was the thorough cultivation of Michigan orchards. I would like to ask Mr. Bassett whether he would advise us to get for orchard cultivation some of these tools.

Mr. Bassett: I will say in regard to this harrow of which Mr. Hatch has spoken, that it is coming into general use. I had one at my place this year and we used it entirely for the rough cultivation of our peach and apple orchards. The difference between that and the common disc harrow is that the two sections can be thrown out, leaving a space in the center, this one section working under the tree and the other out in the middle of the road; when you go back you simply reverse the process.

A Member: How deep do you go?

Mr. Bassett: About two and one-half to three inches is enough. That I consider is a very valuable tool.

Mr. Hatch: As you understand it, Mr. Bassett, these expanding disc harrows are made so that the discs are reversible, that is, they will throw the dirt either to or from the tree?

Mr. Bassett: Yes, they are reversible, also. You unscrew an immense bolt and you can work away from the tree or toward the tree.

Mr. Hatch: After you get through with the disc you follow with a smoothing harrow?

Mr. Bassett: Yes, and then keep that same thing going, keep that soil stirred up, keep the dust mulch perfect; right after a good shower, follow right away with tools that will break up the soil and prevent a crust forming and save all that moisture if possible.

Mr. L. G. Kellogg: In my experience with the disc harrow the smaller 13-inch disc will do more satisfactory work than the

18-inch disc. It may not draw so well, but it will do better work.

Mr. Barnes: Would not the cut-away disc harm the roots of fruit trees less than the solid disc would. And can any one inform me as to whether there is much danger of breaking the cut-away discs where the ground is quite stony, where you should have to drive over solid boulders?

Mr. Hatch: I would not attempt it.

Mr. Pearson: My farm is somewhat stony, and I have used the cut-away for four years and I do not stop to run around boulders, when I come to them I go right over them and the disc is all right yet.

A Member: I use some heavy horses on my cut-away, and they run along, and if there are stones, they take care of themselves, we pay no attention to them.

Mr. H. S. Hager: The discussion so far has not mentioned our common plow; are we to throw that away, or is there a difference in different kinds of soils. I have to contend with medium heavy clay.

Mr. Hatch: I will answer the gentleman this way. The subject under discussion is tools and implements for orchard cultivation; the ordinary turning plow in my judgment has no place in the apple orchard and we are endeavoring to get hold of the best substitute for the turning plow. I have used the turning plow in my orchard, often to my sorrow and never to my delight and it has no place in an apple orchard, or in a cherry or plum orchard.

Mr. Nye: I think I can answer this gentleman's question about the clay land. The disc harrow will work a pretty stiff clay, provided it does not plow it up and get it packed and get it into hard lumps, but if the stiff clay is worked as a sensible farmer would work his clay, the disc harrow will chop it all up and make good tillage. I have tried it.

TRANSPLANTING THE APPLE IN THE NORTH-WEST: WHERE, WHEN AND HOW.

By A. W. Latham, Minneapolis, Minn.

In selecting this subject, it was at first my thought to recite briefly my own experience, but upon reflection I found that it was too meagre as well as ancient to be of sufficient value to lay before you on this occasion, and I proceeded to supplement it with the experience of a number of the most prominent orchardists in the state of Minnesota.

A list of questions bearing on the subject was submitted to sixteen persons, all of whom are having large, practical experience in transplanting the apple into orchards. Of this number seven were nurserymen as well as orchardists, but, in examining the replies, with the single exception of the size of the trees to be planted, I am unable to differentiate between those who are nurserymen and those who are not.

In approaching this subject, it has seemed proper for me to cover something more than is included in a literal interpretation of the title, as the transplanting of an apple is necessarily very closely related to the question of "where" and "when" as well as "how" it shall be done.

The first question the proposed orchard planter asks is as to "where" the orchard shall be located. The general reply to this subject in the northwest has been heretofore: north slope upon elevated ground—and this voices somewhat my own experience. But I was a little surprised, as well as interested, to know that of the sixteen replies to the query as to the best slope for an apple orchard, only four recommended a north slope, while eleven noted a preference for a northeast or north and east slope, and only one a north and northwesterly one. In an experience covering many years with a vineyard which has especially successful in growing a very fine quality of grapes, I am led to believe that the northeast slope is the best even for that purpose, as the vineyard referred to stood exactly upon that kind of an incline. It seems to be very definitely settled then, for Minne-

sota, at least, in the judgment of many of those best qualified to speak, that a northeast slope is to be preferred for an orchard.

In intimate connection with this is the second query, referring to the exposure and necessary protection for the orchard location. From which direction should this protection come? Here, too, the majority of the replies received were somewhat at variance with what I had supposed to be the general opinion on this subject, and out of the sixteen, ten declared directly for protection on the south and west, two others on what is practically the same protection, one for south and southwest and another for southwest and south; one preferred south and east protection, and only one a protection from the northwest. From each there is a general thought that the orchard should have protection. The fifteenth reply struck the key note, I believe, in asking for protection "from the direction of the prevailing winds," and whether this was the thought of the writers of these replies or not, it seems that much the larger proportion of them ask for protection from the southwest winds, which are so damaging to the orchard from their dryness, and also a location on a slope to the northeast, which is virtually also another protection interposed in the direction of the prevailing winds by the elevation of land upon which the chosen slope is located.

As to the soil preferable for an orchard, there is little disagreement. Twelve of the sixteen definitely ask for clay or clay loam, though one or two speak of it as a rich loam or a good loam, and one as soil fit for corn. For the subsoil there is equally a general preference for a clay subsoil; three asking also for a subsoil going down to limestone rock; two preferring gravelly clay; one, open clay; two, sandy clay; all of these selections being made evidently for the purpose of securing good drainage. The evident motive underlying these replies is for a soil which is not only fertile in the elements required for the growth of a tree but is also especially retentive of moisture; and, indeed, the whole purport of these replies is in the direction of securing and retaining sufficient moisture both by a suitable soil and by a location sloping away from the direction of the prevailing winds and protected also from the same quarter.

The preparation of the soil I will touch upon only briefly in saying, that in a clay soil it would undoubtedly be wise to use

the subsoil plow if possible a year before planting the orchard, so that the soil may subside to a sufficient degree of solidity, and, following the same principle, the surface soil should be deeply plowed the fall before planting, taking it for granted now the planting in any case in this latitude will be done in the spring. Lighter soils, of course, do not need this deep treatment, but if it can be avoided an orchard should not be located on a light soil.

This brings us to the question of the best time to dig and transplant the trees that are to constitute our orchard. Of the sixteen replies received in answer to the question as to the best time to dig the trees ten without conditions agreed upon the fall, of which number four express a preference for late in the fall and one for "as early in the fall as practicable after the frost has checked the growth." Four express a preference for digging trees in the spring as soon as the frost is out of the ground. Of these, two express a preference for planting in the spring; it is probable that they may have these trees on their own grounds and this fact has a bearing upon their preference. The large majority, however, prefer the fall digging, and this view agrees with my own experience,—aside from the convenient opportunity that may come to a planter who has trees upon his own place and can remove them and transplant at once without delay.

Following naturally upon the practice of digging trees in the fall is that of caring for them through the winter. The replies to this question are divided between the cellar and burying them out of doors, depending probably upon whether or not the cellar at hand is suitable for keeping trees. Eight speak of burying them all over, root and branch; six only speak of heeling them in, but it is fair to presume that the thought here is also the same, that is, to bury them and cover entirely; one calls attention to burying them in sandy soil, but says nothing about mulching them after so burying, which would of course, be absolutely necessary to insure safe keeping. A number speak of using this mulch over the covering of earth, and it should by no means be neglected. With the trees sufficiently buried and carried through until the following spring, we have arrived at the problem of planting.

At what time in the spring should the orchardist in the north-

west set out his trees? On this subject there is not very much disagreement, early spring or as soon as the ground can be worked being the very general conclusion of those who have considered this question, ten of the sixteen responding in almost these exact words. One fixes it definitely at April 20th, and another at from April 20th to May 10th. There are four of the sixteen, however, one-quarter of the number, who have evidently another thought on this subject, as they take the position that the ground should be warm before planting, two of them referring to it in this way and one carrying the thought in recommending "early corn planting time;" another "as the buds begin to swell on the orchard trees." In my own practice I have had the best of success in planting about the time referred to as "early corn planting time," and if the trees are on one's own ground they may perhaps be dug and transplanted with some success even after the leaves are beginning to start a little; but it is undoubtedly better that the trees, unless dug the fall before, should at least be dug and heeled in very early in the spring. Then the question of planting either quite early or a little later may be one of convenience. Referring to this subject, Charles Downing says: "Early in autumn and in spring before the buds expand, may, as a general rule, be considered the best seasons for transplanting," and again "Spring planting should always be performed as soon as possible, that the roots may have the great advantage of the early and abundant rains of that season." Prof. E. S. Goff says: "Trees that have been long exposed to the cold, dry winds and have thus suffered depletion of water from their buds and branches are better not lifted until the buds begin to swell." Sir John Evelyn in a book on horticulture, printed two hundred years ago, notes that: "Sudden irradicating of trees for an early transplantation expose them to a tedious and uncertain trial, how they will bear it."

Having then considered the subject of time of planting, we may next decide upon the character of the tree to be used. What shall be its size, age and method of propagation? The sources of information I have used agree in the use of a root-grafted tree, though they diverge a little here as to the method of its making. One speaks of grafting on hardy roots,—upon

this point, however, certainly all are agreed. Two would create this orchard tree by top-working it. Three would use whole roots and graft in the crown. Six speak specifically of using a long scion and short root. The majority, however, as it appears, do not lay stress upon this point.

As to the age and size of the tree there is considerable divergence within a limited range, only one of the sixteen expressing a preference for at tree one year old; eleven, however, would plant a two year tree and fourteen a three year old tree; two are equally willing to plant trees four years old, and both of these are planters of large experience. This list aggregates more than the sixteen, which is the result of a preference expressed by a number for trees two or three years old. It will be seen here that there is a larger preference for trees three years old than for any other age, and this arises from the fact that the nurserymen in the list stand pretty well together for three year old trees, four to seven feet being the range in height within which they agree. In my own experience I have been especially successful with trees two years old, trimmed to a straight shaft and cut back to the height below which it is desirable to have the trees head out, being sure, however, that there are a sufficient number of buds below this point to make the necessary well balanced top.

I find there is some disagreement in the replies received to the question in regard to top-pruning. A number express an opinion indicating that the pruning should be sufficient to secure a good shaped top, but the writer may have understood the question to apply in a general way to pruning the tops of trees and not especially connected with transplanting. Four would prune away one-half of the length of the branches, leaving the central shaft, or shoot, entire; two would cut off two-thirds of the length of the branches, and one, one-third; one expresses his judgment to "reduce the top the same as the root," and this, it seems to me is the logical thought. Space is too limited to go into detail here, as some of the writers have done, though they agree fairly well, it seems to me, that one-half of the new growth should be taken from the tree at the time of transplanting. All writers on horticulture however, do not agree in this, and as eminent an authority as Charles Downing saying that

"pruning heads of transplanted trees at the season of removal we think generally an injurious practice; it is certainly needless and hurtful in the case of small trees." Others speak of the preference for pruning half its branches *after* transplanting rather than *before*, even if the trees were dug and buried in the fall.

A good deal has been said and some experimenting done late years along the line of close root-pruning for transplanted trees. I find a very general agreement among planters of note, not only in the northwest but all over the country, in leaving the root of as good a length as can be conveniently dug, and I judge the length of root as left by the ordinary nurseryman using the tree digger, to be in the main satisfactory to planters. One writer, it seems to me, voices the general sentiment fairly in saying that two-year trees should have the roots trimmed back to six inches, and three year trees to twelve inches, and larger ones in proportion. Sir John Evelyn, the old English writer referred to above, seems to have considered this subject with much care when he says that: "the main point is to see that the root be larger than the head." My correspondents, while they say nothing on the subject of close root pruning, almost uniformly agree that the injured roots should be pruned off smoothly, with a slanting cut from the inside, and five speak of having smooth cuts on all ends; a number speak of the length of the roots of three year old trees ranging from ten to eighteen inches. It is probably wise to trim off injured roots in this way, although it is possible that planters generally are mistaken in believing that roots as a rule grow from the callous which forms over these cuts; at least Prof. Bailey says as a results of his experience that: "the roots do not necessarily arise from the callous."

Having now secured our tree and agreed upon other conditions connected with the planting, we shall proceed to set it, and this brings up a question upon which the planters in the northwest are, it seems, very fairly agreed, although they are somewhat at variance with recognized authorities. How deep shall the tree be planted? My own practice which, however, dates back twenty or more years, has been always to set the tree so that when the ground settled it would stand an inch or so

deeper than it stood in the nursery. As far as I know, the results of this method of planting have been satisfactory. Charles Downing says: "No tree should be placed deeper than it formerly grew." Hooper, in his *Western Fruit Book*, says: "Plant the tree at the same depth that it previously occupied in the soil." Sir John Evelyn says: "Plant not too deep, for the over-turf is always richer than the next mold." Coming down to later authorities, Prof. Bailey says: "Trees should be set an inch or two deeper than they stood in the nursery, for the loose earth will settle and wash away during the course of the season, even if well packed when trees are set." Getting nearer home, Prof. Samuel B. Green says: "In the best locations trees should be set about four inches deeper than they grew in the nursery." The sixteen experienced planters whose judgment I appealed to on this subject almost uniformly agree upon what is now called deep planting, and as this is such an important question, I will give you their replies in detail. One would plant one inch deeper than in the nursery; one, three inches deeper; one, four inches deeper; one, from three to six inches deeper; one, from four to five; four, from four to six; three, six inches; one, four to ten inches; one, five to seven inches; and two, twelve inches deeper. Of the sixteen, you will perceive that ten of them range from four to seven inches deeper in planting. From comments that appear in connection with these replies, I am led to believe that the general purpose of this deep planting is to prevent the drying out of the trees. What surprises me in these answers is, that while a number speak of the necessity for deep planting on account of possible drought, not one refers to the advantage of deep planting as resulting in a growth of roots from the scion. This thought is evidently not so much in mind as the former, though I have often heard it expressed elsewhere.

It is hardly necessary to say that in planting the orchard tree a hole should be dug at least large enough to take in the roots without bending them, and the ground should not be too moist to crumble easily, and that the earth should be carefully worked in amongst the roots with the hand, and the ground pressed or stamped down about the roots as the planting pro-

ceeds. If too dry, it may be necessary to pour in some water before the final filling in of the hole; but no water should be put in after the hole is finally filled up, and the top soil should be left loose. For the sake of conserving the moisture in the ground, the surface about the tree should be well mulched with suitable material or cultivated faithfully from the start. There is a variance in the methods of planters in regard to the way the surface of the ground should be left after planting. The writers of books covering this subject disagree somewhat with northwestern planters. A number of writers speak of the necessity of leaving the ground a little higher about the tree than the general surface, and in many cases accompany this direction with the suggestion that it is especially necessary in the fall, that the water may not stand about the trees.

In a general review of the subject of this essay, noting the variations from the instructions of recognized writers on horticulture that are being practiced by northwestern planters, as represented in the sixteen whose views I have quoted you, it is apparent that Prof. Goff struck the key note of the situation when he said: "An adequate supply of water is the most important condition for the well-being of plants," and that these variations are the result of a recognition of the fact that the *water problem is the orchard problem* of the northwest. This undoubtedly does not apply so much to all parts of Wisconsin as it does to Minnesota and the Dakotas. The selection of a northeast slope; the insistence upon protection from the southwest; the necessity of digging and burying in the fall; the trees to be planted the following spring rather than leaving them out to be weakened and injured by the drying winter winds; the deep planting, sometimes even in deep furrows, and, finally, the necessity of mulching or continuous and most faithful cultivation; all these facts point to the prime necessity of guarding every process to secure a sufficient water supply, which has been forced upon the planters of the northwest as a result of the dryness of our climate. This, it seems to the writer, is the great lesson that we have been learning in the last quarter century, and the recognition of which is placing orchard culture in this region upon a secure basis.

These are rather rambling thoughts. In taking up the subject, I had not in mind an essay on the conservation of moisture in orchard culture, but my investigations have naturally drifted this way, and I leave this to you as my final thought: The orchard planter in the northwest will succeed directly in proportion as he shall use every means at his command to conserve the necessary amount of moisture, without which his orchard cannot possibly thrive.

SUMMARY.

Grouping together the opinions of those whose judgements have been invoked to supplement my own, as set forth in these notes, upon the few points connected with apple culture in orchard touched upon herein, we reach the following composite conclusions:

1. Select a northeast slope for an orchard.
2. Provide protection for the orchard from the direction of prevailing summer winds, usually from southwest.
3. Select for the orchard a strong, clay loam, with a subsoil of clay pervious to moisture.
4. Dig the trees in the late fall and bury for the winter.
5. Plant in the spring as early as the ground is in good condition to work.
6. Plant trees three years old and four to six feet high.
7. Prune the roots only as necessary to trim off all bruised ends, cutting from beneath outward.
8. Prune away one-half of the new growth from the top.
9. Plant the tree from four to six inches deeper than it stood in the nursery.

Mr. Barnes: I think that our Friend Latham has struck the key note when he recommends deep planting, especially on most of our soils in the north and west. One of the greatest benefits we get from deep planting, independent of conserving the moisture, is the preventing of sucker sprouts coming up from below the union of the grafts.

Mr. Baker: I would like to see the

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planting your orchards it would not be advisable to dig the holes from $2\frac{1}{2}$ to 3 feet deep, putting the top soil in the bottom of the hole to a proper depth and setting the tree upon that? I think in my judgment that causes the roots and feeders to penetrate downward instead of feeding upon the top soil, being the poorest soil on the top.

Mr. Latham: I would have to either answer you from experience or simply from theory. Now, my experience has been to dig a hole deep enough to take in the roots of the trees without bending, and I have always planted a tree an inch or so deeper than it stood in the nursery.

Mr. M. S. Kellogg: I would like to ask Mr. Latham, does he think that a special trimming of the roots on the under side has a tendency to send them deeper down into the soil?

Mr. Latham: No, sir, I do not. You cannot prune square across and make a smooth cut, but you have got to have it at an angle. I do not think it makes any difference in what direction.

Mr. Kellogg: The reason I asked that question was that just lately I read in some of our horticultural papers that some one claimed he could make a tree root nearly twice as deep by a special system of pruning the roots on the under side, so that the smooth cut would be toward the bottom of the hole, and in my own mind I questioned whether that was possible or not. Certain varieties will root deeply anywhere; others will send out surface roots.

Mr. Latham: They go for water. If the soil is a clay and water percolates through, the roots will go down into it, regardless of which way they start out.

Mr. Baker: I would like to ask, is it a fact that freshly pruned roots will take hold and grow more quickly than partially dried ones sent from the nursery?

Mr. Latham: I suppose there is no disagreement on that point.

Mr. Harris: Would you shorten the top in proportion to what you shorten the root?

Mr. Latham: Certainly, always.

Mr. G. J. Kellogg: I think the question of protection of the body of the tree is just as much a necessity in the success of

orcharding as putting the tree in the ground. It is of just as much importance as transplanting, it is a self-evident truth.

Mr. Z. K. Jewett: I would like to ask if anyone has had any experience in Mr. Stringfellow's method of transplanting trees; I suppose most of you have read of it. He takes a tree and trims it back, cuts all the roots off up to within about two inches, cuts the top all off, and he makes a hole just about big enough to get that tree in the ground, and plants it; and he claims a great success.

Mr. Latham: That may be down in Texas.

Mr. Moyle: That experiment was carried on here at the experiment station at Madison; I was there at the time and assisted. We took a dozen crab trees and we cut them back as directed, and then we erected a system whereby we could force water by gravitation into the roots of part of those trees, and part of them we watered every day, and part of them we did not water at all, and then we took observations every day. The result was, that those where the water was forced into them through the root with this rubber tube grew; those that were watered came in seven or ten days later, and about four that we did not water at all came on also but were late; it was along pretty near July almost before they pushed out, but we lost none of those trees; they were all good, healthy trees to start with. That is the point: you want a good, healthy tree.

Mr. Barnes: I would like to know what benefit it is, after working two or three years to grow a nice lot of roots, to then cut them all away.

Mr. Latham: Looking up the subject, I ran across considerable bearing along this question of long and short roots, and I was led to this conclusion as the result of all the information I gathered on the subject, that there is a tendency amongst planters—and it seems to be an intelligent tendency—to plant trees with shorter roots than used to be insisted upon.

Mr. L. G. Kellogg: From a little experience I had I am almost led to believe that you could resurrect a dead tree by the Stringfellow method. Two years ago I purchased some trees and they happened to be badly root-killed. I at once cut all the lateral roots off, and trimmed all the rest off to a little

handful, and I planted the trees and three-fourths of them made a very nice growth; there was a growth of at least 12 or 14 inches on the top. The lateral roots were nearly all winter-killed.

Mr. Moyle: There is one thing that occurs to me very emphatically at this time, and that is, the vitality of the tree; that is one of the most important things.

VARIATION OF FRUITS UNDER CHANGED ENVIRONMENTS.

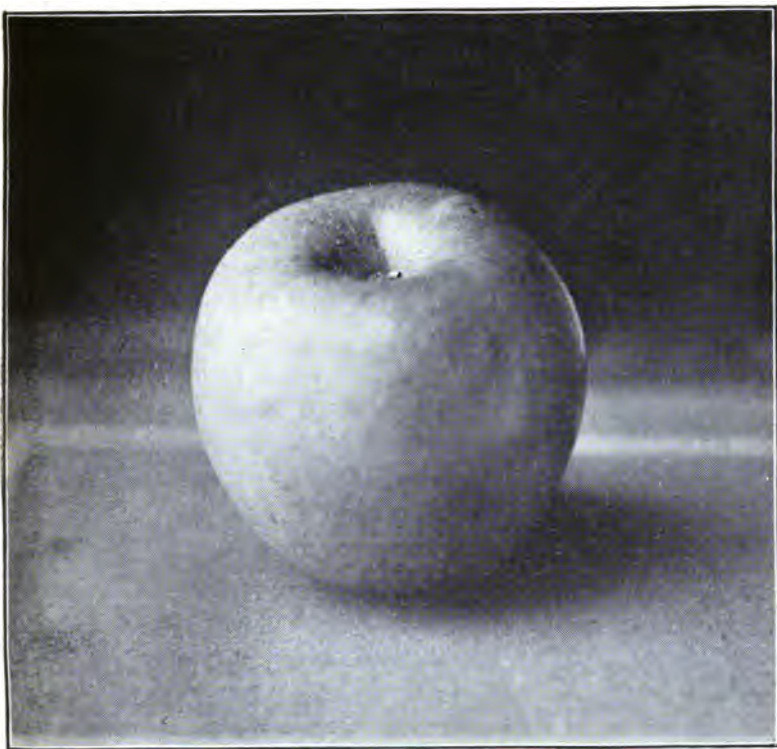
By Oliver Gibbs, Prescott.

A paper read before the Wisconsin State Horticultural Society,
at Madison, February. 4, 1902.

One law of variation seems to run up from the mineral through the vegetable and animal kingdoms.

Darwin draws a distinction between variation due to environment and variation due to constitution; but what is constitution anyway but the result of the sum of all previous variations in the ancestry? And what are any of these variations due to but the ever-changing environments in the progress of evolution? To be sure, we are obliged to suppose there must have been something away back somewhere that originally was a constitution, but who has ever located it or told what it was? Who has ever gone down through the husks of anything to find the first cause and the constitution in it?

The elder Agassiz spent the last and best years of his life in trying to fathom the mystery of the egg. He peeled it down and dug down and down and examined all its parts with his microscopes, and kept on peeling and digging down into the germ and into what was supposed to be the protoplasm till he found himself baffled by something which seemed to be beyond the reach of human observation—a little dot only perceivable with his glass of highest power—and there he rested, not knowing whether he was anywhere near the archaen rock of the subject or not; and when he quit he was still at work on



NORTHWESTERN GREENING.

the environment of the egg; for environment is not that alone which surrounds the external form, but everything surrounding any part of the form and furnishing its life conditions.

In speaking of the environments of fruits, then, we must consider the whole tree or plant and every part of it, and the fruit down into the seed, and every part of that. Of course in a short paper of this kind no one could be expected to work such a scheme out, if competent, which I am not; but there are some things about it which have seemed to me to be too much neglected in our horticultural society studies.

But before considering what they are, permit me to mention a local variation which I have seen in the animal world due to environment, you bearing in mind the claim made that one law governs all; and if this is so, as it is with the fish, so it is with the apple.

You go up to Pierce county, in this state, and travel north-erly along the east bank of Lake Pepin, starting at Maiden Rock bluff, where the Indian girl jumped off on account of family differences as to whom she should marry and do the drudgery for.* Two and one-half miles from this bluff you come to Pine Creek, a short, small trout stream without tributaries. A mile and a half further up the shore you pass Maiden Rock village; and half a mile further on is Rush River, a large trout stream, having at distances, easterly, about ten to twelve or fifteen miles, as its tributaries, Brush Creek, Lost Creek, and Cave Creek. Now, it is reasonable to suppose that these five streams were all originally stocked with one and the same kind of trout. But if you were to place here on the table before us a fresh caught characteristic trout from each of these waters, and call in an observing local angler of that neighborhood, he would be able instantly to tell you which stream each trout came from. You would know they were all genuine brook trout, all *salmo fontinalis*. The general expression is the same, but they differ greatly in color and other external markings, and even in shape, and somewhat in flavor, though as to the differences in flavor I hardly think any habitual tobacco

*Her name was not Wenona as usually supposed, but Ou-li-e-ta. Lieut. Pike in 1805 was the first one to tell her story, and Schoolcraft in 1820 the first to tell her name and put the frills on the story.

chewer or whisky or beer drinker would be able to quite agree with me by expert tasting. All these differences I think are caused by environment, though I cannot tell with certainty how they came about and geologists to whom I have stated the facts do not agree in assigning the precise influences. That they are based in geology I am very confident. One thing is certain: At the period when I first observed and studied these variations of the trout, as early as the year 1868, nothing had been done in stocking the streams of northwestern Wisconsin with trout of other regions, so that the trout I saw could not have been importations of any of the distant forms of the species. At the present time the angler will find several of them, chiefly the rainbow trout, and it will be interesting to watch their inevitable variations in their new environments. Go up to the top of the bluff behind Maiden Rock village, and I am told you can walk from there to Lake Superior without crossing any running stream of water. Here, then, there must be a geological divide. Facing north you do not have to go more than twenty miles before you will have, on your right, diamonds and gold on Plum Creek, and a little further on iron at the Eau Galle, and many other minerals that are wholly unknown to the left of you, unless scattered in the drift or buried in the formations below. Here I will leave this illustration with the remark that the diamonds are very small ones so far as yet found, and the gold not as plenty or come-at-able as in King Solomon's mines. I guess fruit raising will pay better in Pierce county than gold mining or diamond hunting.

To get down, or up, to something more practical, go with me to any of our September fairs where they have a good exhibit of apples, and we shall see a long line of plates of our favorite well known varieties. Here will be perhaps twenty-five or thirty plates of Wealthy, and probably among them ten or fifteen plates that look like different kinds of Wealthy. One will be a summer apple, but a little later than the Duchess; and another an early fall apple; still another a medium fall apple, then comes a late fall apple, and finally, a few plates of Wealthy winter apples, and so on. Talk with the exhibitors, and maybe the grower of the summer Wealthy will tell you he bought his Wealthy trees

for winter apples, but the agent lied to him. The chances are, you will not find many of these exhibitors, possibly not one, who knows why one plate of Wealthies differs so much from those of the other exhibitors. Perhaps some one who has the best and firmest of the lot will hear it remarked that his Wealthy may be Mr. Gideon's Peter, as that is said to be a better keeper than its mother parent the Wealthy. If Wyman Eliot should happen along just then, he would cut with his jack-knife and cut the apple into halves and examine its seeds. If he found the seeds phenomenally small, he would pronounce it a Peter sure enough, and probably be correct; and if Mr. Patton of Iowa should drop in, he would coincide with Mr. Eliot, and say to you he can tell the difference between his nursery rows of Wealthy and Peter by the expression of the trees for forty rods' distance away from him, looking down the rows. Anyone who has carefully studied the variations from changed environments can stand beside these rows of apple plates at the fairs and describe the soil, exposure and elevation where any one was grown, though he might never have been within fifty miles of there before, or had any information except from the exhibit itself.

It is largely so with all our apples, although some kinds are less plastic, so to speak, in yielding to environment than others. Even the Duchess will show a great deal of this variation. And there is the Utter or Cooper that, so far as I know, heads the list for this tendency to vary in appearance.

There was once a time when in the race for awards on largest number of varieties, the Utter did duty for eight or ten entries under as many different names. I have even seen it in South Dakota attracting great attention at a Territorial Fair as a new and valuable seedling. But we have grown more honest of late and our judges a little sharper. I should say here that I think the Dakota exhibitor truly thought it was a seedling. And this reminds me to say that if you have at this meeting any discussion about apples claimed to be new seedlings and looking like some old variety, so that your judges feel inclined to rule them out as seedlings, I would like to tell you of some surprises I have found in that line. Here is not the place for it.

Prof. Budd sent me among a lot of Russians some trees of the Antonovka, his King Apple of the Steppes. When it came into bearing I was not as well posted as I am now about variations due to environment, and I said, "One or two trees of the Antonovka will be all I would recommend." The tree was all right in every way in my orchard. It bore for me in successive years heavy crops of beautiful large golden apples, but they ripened too early for fall and too late for summer apples, and would not keep ten days after they were ripe enough to pick for market. There was really no place for them between the Duchess and Wealthy as I grew them. This was at my farm in South Dakota. Yet, up in Pierce county, where I now live, I have found Autonovkas bearing year after year, good, early winter apples of about the same season as late maturing Wealthies, and the growers prize this variety highly. I know now that the trouble with my Autonovkas was that in the place where I put them, the soil was too loose and sandy, too full of wash material coming down the sides of a bluff to the bench where they grew, and maybe had too much humus. The trees of this variety I saw in Pierce county were in a heavy clay soil such as you find in the big woods surrounding Ellsworth, the county seat; and the Wealthy, to be a keeper, seems to want the same environment as the Autonovka.

The practical point in all this is that our apples must have for each a certain environment,—a certain soil, elevation and exposure on the farm, to do themselves justice and yield the most profit to the grower.

Hundreds of illustrations could be given, but only a few more can find time and space here.

In a search made throughout Minnesota in 1883 for apples to show at the biennial meeting of the American Pomological Society held at Philadelphia in September of that year, when that state won the Wilder medal, you know, the best specimens of the Fameuse, it is remembered, were found on trees growing in the kind of soil that the Autonovka and Wealthy would detest. So many such cases were found as to indicate that the Fameuse would do its best in a sandy soil.

In my Dakota garden I planted 200 sand cherry roots taken from a neighbor's place, where they were growing in a neg-

lected garden of heavy soil, choked with prairie blue grass, and not showing much variation in the fruit. I strung the rows down a winding slope, a few bushes at the lower end coming into a spot of deep, rich, sandy, made soil where the wash from the bluffs had dammed up against an old rail fence crossing the run. Right here the bushes bore cherries three-quarters of an inch in diameter, and of so much better quality than the acrid things further up the rows, that my neighbor's children ate the most of them up out of hand (by permission, of course), and left the pits there for me to grow about five thousand seedlings from the next season. I really did not know how good those cherries were till the children had pretty nearly harvested the crop, and the pits they left would have told the story if I had not picked a cherry myself. This paid me pretty well, for, picking up and planting the pits, I sold 2,500 seedlings to a nurseryman a year from the following spring. So don't you say a word against the sand cherry till you have planted a good pedigree stock of it in rich, sandy ground, and given it the best of culture. It may revert, but is more likely to advance, for it responds quickly to improved conditions.

We have all seen plenty of variations due to environment. But do we value enough what we see in our own gardens and orchards, and turn our observations into knowledge by good thinking and into profit in the "plunks"? That is the question.

Often a farmer has a favorite spot for an orchard where the environments are not suitable to the kinds he wants to plant, and he may have on his farm some other spot or spots where they are suitable. Let him study the question at home, at the fairs and by talking with his neighbors and by attending horticultural meetings when and where it is convenient. Let him by all means pay his dollar to the State Horticultural Society for an annual membership, and read the Society's reports; put the same amount and kind of head-work into fruit growing that he does into stock raising and dairying, and he will make some success of it.

Just one word more. There are immense variations to be seen in our familiar varieties of apples, due to changes of climatic environment; and those who want to change their own

climate and plant out orchards for commercial purposes, will do well to study this phase of the subject.

Since your Secretary invited me to furnish a paper on this subject, I have made an effort to obtain a collection of apples of well known varieties from widely separated parts of the west and northwest, showing their variations, mainly due to climatic environment; but the time was too short, and I have been able to get only a few samples from the Minneapolis markets, without any record of their environment except the state where they were grown. I have, therefore, placed them on your tables for what little they may be worth as an exhibit, but not as illustrations for this paper. I wish I had a Wealthy from the Pacific coast to compare with yours here; but they write me from there that the Wealthy, in that country of such abundant and splendid apples, is so popular among them that it is immediately sold in the home markets or eaten up by the children, and they have none left.

As I write this paper, I presume there will be on your own tables many plates of apples that will serve to illustrate the influence of local environments and prove the importance of greater attention to the subject. Yes, of climatic environments, too, for we have as many different climates right here in Wisconsin as we have different geological formations, the basis of climates.

The influence of environment on the fire blight, and even on insect depredations is another phase of the question, but to treat the subject further would make this paper too long.

Mr. Marshall: Ever since I have been a member of this society I have heard Mr. Philips favor one apple, and Mr. Hatch another, and Mr. Kellogg another, and they never have agreed yet; but I think Mr. Gibbs in his paper has explained the whole thing. It is just the apple, where it is grown and how it is grown, that makes the difference. I am very glad indeed to have that matter explained to me.

Mr. Harris: Is there not more in the selection of the stock

that we get from the nursery than in this variation from environment?

Mr. Elliott: Take, for instance, the Wealthy. On the home farm where it was produced it grows very different from what it does in southern Minnesota at Hammond, on Mr. Howard's farm. You take the two apples and put them side by side, and you would almost swear they were two varieties. That comes from environment, from change of soil, or something.

Mr. Latham: I think the term "environment" should be used with a larger definition than seems to be applied to it here. Environment is largely in the control of the planter; the question of cultivation is one of environment, the question of stock on which the tree is grafted is environment; and as between two planters, two orchards, the one may permit his orchard to grow in grass and thereby dries up the ground, ripens the fruit too early and drops it so that it does not keep; and another who cultivates his ground thoroughly and thereby holds the moisture in his ground, keeps the leaves a bright, vivid green, keeps the fruit on the tree and matures it well in the fall,—the one has a keeping apple, and the other one that goes to decay.

Mr. Gibbs: There is one point I did not mention in my paper that this gentleman's remarks have suggested, and that is the influence of the pollen on the fruit; that is a matter of environment and will readily account for the difference of value in various orchards.

The President: I believe that if you enlarge the sphere of environment sufficiently, you may account for a great many things. I could pick Wealthy apples from our orchard which were highly colored and the flesh was colored all through, this year; and four weeks before I could have picked the same apples off the same trees and they would have been of light color and light flesh and everything all right. Those apples that were colored inside would keep but a little while, but if you pick off the apples before they get as ripe as that they would be called good keepers; and they are good to eat, too.

Mr. Elliott: I was in the cellar on the Gideon farm some four weeks ago, and there were Wealthies in good keeping condition then, without any cold storage or anything, well colored.

Mr. Latham: I have found in my rather limited experience in keeping Wealthies that the keeping of the Wealthy does not depend so much upon its condition of maturity as it does upon the way it is handled, upon the shape in which it gets into cold storage. I know that the Wealthy can be gathered, fully matured and highly colored, and keep well until the next spring. If you can get the apple into the barrel without injury, and get it into cold storage without bruising, it will keep; but if you do not, it will not keep, I do not care how green it is.

The President: I have not had any great experience, although I have had a little in several years. I believe that the Wealthy, as far as I am concerned, keeps better in cold storage, when it is picked a shade green, not too green, but matured and still not too ripe; that has been my experience.

Mr. G. J. Kellogg: I have been trying to see what we could make out of this subject that would be practical. It may aid us in judging fruit at fairs, it may convince us that we do not know anything about varieties when we get the same variety under different conditions. I at one time had sixty plates of one single variety competing for two premiums. Well, I supposed I knew something about the apple, I think I did, but after this paper and this discussion, I do not know as I should know a Wealthy under various conditions of growth. The question is: how can we grow to perfection these varieties on the soils that we have?

STUBBORN FACTS IN THE FORTY-SECOND DEGREE OF LATITUDE.

By W. J. Moyle, Yorkville, Wis.

Leaving out Chicago on the south and Milwaukee on the north, this parallel takes within its embrace the most desirable and satisfactory place for a home between the Gulf of Mexico and the North Pole. Lying as it does between the cold of the north so necessary to vigor, and the heat of the south so essential to flower and fruitage, it becomes at once the ideal 69½-mile belt around the globe.

But, confining ourselves to that short strip of the forty-second parallel within the bounds of southern Wisconsin, I shall direct your attention to some facts which may be denominated as "stubborn." To one engaged in horticulture the changeable climate is one of the most stubborn facts he meets with, as the business is one that requires anything but stubborn treatment so far as climate is concerned. To offset this, the horticulturist must be composed of the following stubborn qualities: Intense enthusiasm, unbounded hope, and undying faith in the future. These qualities will offset the many failures that will befall him on account of the afore-mentioned climate.

Our climate demands hardy fruits, berries, and flowers, and we as nurserymen should be able to supply the demand. This brings us to another "stubborn fact" that the nurserymen of Wisconsin have to contend with, viz., that of propagation. The climate and conditions are against them, provided they undertake to proceed on the same lines that are followed by eastern and southern propagators.

Budding and grafting are the two methods employed, almost exclusively, in propagating fruit trees at present. I am convinced that there are methods for us that are better than either of these for some fruits. In working, thinking and studying on this matter I have observed that nature as a rule employs those methods best adapted for the location, in perpetuating herself. I notice that our wild crab-apples, thorn-apples and plums all sprout and grow readily from root cuttings. With this key in my hand, I am complying as far as possible with the natural conditions, and the results so far have been most gratifying.

I think all of our native plums should stand on their own roots, as they grow readily from root cuttings. Many varieties of the cherry and pear can also be propagated successfully this way. At present I am growing many hardy cherries on their own roots, and in the near future will give the matter a thorough test.

The Keiffer pear and its seedlings grafted on small pieces of apple roots grow readily throwing roots from the scion, and are

thus soon established on their own roots, which is more to be preferred than having them on French seedlings the hardness of which is a doubted question.

If it were not for its rooting propensities the native crab would become extinct, I fear, in Wisconsin. I reason from this that if we would have hardy bearing fruit trees we must not as has been done for years discourage their sprouting propensity, but encourage it; and furthermore utilize it as a method of propagation.

This puckery sour little green crab, "so much despised," deserves more recognition than it gets, for it has many desirable qualities.

Where can you find a more vivid and beautiful description of it than that given by Thoreau as he describes his first impressions of this beautiful tree in bloom, as he gazed upon it for the first time from the car window, while on a westward journey through Ohio, entranced with its rosy splendor and inhaling the perfume wafted to him through the open car window. Then we must remember that it is the parent of the beautiful Betchels double flowering crab, at present so extensively planted in everybody's dooryard.

Its flowering propensities, however, are not its only good qualities as its fruit is quite palatable if properly cooked, making good pies, sauce and jellies. These crabs were eagerly sought last fall in the woods and thickets, parties often paying for the privilege to gather them, as they sold readily at Racine for \$1.00 a bushel.

We have noticed that there is with the fruit of this crab quite a variation in size, color, etc., and we feel that with proper selection it could be much improved. Let the state society offer a premium for the best plate of the native crabs every year at its annual meeting and then we will see what can be produced. I think it would be a very interesting contest and afford much amusement as well as instruction.

Southern Wisconsin is thickly populated with people and dotted all over the land are all *kinds* of homes from the country villa of the wealthy merchant to the little cottage of the laborer.

Now, surroundings or environments of the home have much

to do with the happiness of the inmates. All home lovers would have nice grounds, orchards and gardens, proportioned according to their means. They would plant those trees and plants that can be procured at reasonable rates and are adapted to their location. Their lack of practical experience and knowledge along these lines places them at the mercy of those who would and do engage in the business of supplying these wants. And who is better able to understand and be in a position to advise his neighbor than those of us who are horticulturally inclined.

Let us see to it that the proper trees, shrubs and flowers are recommended.

I wish particularly to emphasize the importance of planting more hardy herbaceous stuff as I feel that nothing can be grown that will be more satisfactory.

Many old fashioned perennials should be brought to the front and occupy the place they deserve. Phlox, Honeysuckles, Larkspurs, Rudbekias, etc., should be growing in every one's dooryard.

In conclusion let me say that to succeed we must make the most of what we have at hand. If this is our disposition we will be like Agassiz, the great naturalist, who when invited to go abroad to study insect life in foreign fields replied: "I thank you most heartily but I have no time for as yet I have not up to the present time completely explored my back yard."

FLOWERS AND THEIR INFLUENCE.

Edith Trelevan, Omro.

Without flowers how desolate this world would be. It would be a face without a smile, a feast without a welcome. Flowers have been loved and cherished for their purity, fragrance and bright cheerful colors from the earliest day and there seems to be an inborn love for them in the heart of every man, woman and child, which makes itself manifest sometime in life.

Henry Ward Beecher once said,—“Flowers are the sweetest

things that God ever made and forgot to put a soul into," but in the words of one of our poets,—

"Your voiceless lips, O Flowers, are living preachers,
Each cup a pulpit and each leaf a book."

and in the words of Longfellow,

"In all places, then and in all seasons,
Flowers expand their light and soul-like wings,
Teaching us by most persuasive reasons,
How akin they are to human things."

Flowers are the stars of our earth even as our stars are the flowers of heaven. Held carelessly in the hand of a child or studied by the man of science, they can but awaken in the mind a sense of the beautiful and the good. Ever since the earliest time of civilization, the culture of flowers has received more or less attention and the variety and beauty of flowers, the freshness and fragrance which we associate with them have long been themes for poet and naturalist. The endless forms in which they appear, their adaptation to certain conditions, the peculiar properties which many species possess though grown in the same soil, heat and moisture, the wonderful changes which they undergo from seed to plant, and from plant and flower to seed again, and the wonderful beauty of each individual plant and flower, to say nothing of their utility as articles of food, medicine and clothing are all subjects of never failing interest to a reflective mind.

Did you ever stop to think that the charm of nature lies in her diversified forms and various hues? The most simple structure that rises from the earth is a marvel in its mechanism and in its growth and coloring there lies a mystery beyond the power of man to fathom. Close communion with nature leads to higher and nobler lives and flowers expand whatever is best and purest in human nature. Hearts of thousands upon thousands are nourished and uplifted to a sense of a higher power through the influence of flowers. One of the strongest arguments in favor of their cultivation is the ennobling influence they have upon the soul, and the incentives they give to a higher

and purer life. We admire the handsome foliage and beautiful blossoms of many of our shrubs and trees, but we love flowers and it is from them of all things in nature we derive the greatest pleasure. There is something in the swelling buds, the opening flowers and spreading foliage, that instils into the mind a clearer discernment of right and wrong and a higher standard of morals.

The association of plants and flowers always tends to educate, elevate, sweeten and refine. Daily contact with them has a decidedly broadening influence upon character. When we find a man who loves his flowers for their own sake, we rarely find a bad man and their cultivation is more edifying than their use.

Every home in our land should be the seat of an amateur flower garden, and especially every farm home. Flowers would add many fold to the attractiveness and home-like appearance of hundreds of farms. Few things are more attractive to the traveler in any country, than the homes of people surrounded and brightened with sweet flowers. We know that such homes are homes of culture and refinement for so clearly do flowers affect the morals that homes surrounded with them indicate peace and contentment as surely as their absence indicates lack of these virtues. Children love beautiful things and are fond of flowers. The cultivation of them will modify their tastes and change their natures, and this love cherished will often prove a safeguard from evil in later years.

It is a safe, pure pleasure derived from the cultivation of flowers. The way to expel wrong is to fill the soul with the beauty of what is right, and lower things lose their power when the love of the higher is awakened. Flowers are safe friends, they cheer and uplift and are the forerunners of good books. The poor can have and enjoy them as well as the rich, for it does not require such an education to love and appreciate them as it would to admire a picture of Turner's.

Flowers make our homes fairer, sweeter and dearer and the home is "the heart of the world." How much of charm and freshness they add to the room and their influence is not only refining, but restful, and a delight to both mind and eye. When we consider how much flowers brighten our lives and cheer our homes is it any wonder they are so universally loved? More

and more as we advance in the scale of refined living do flowers become our inseparable companions. Of one thing we may be sure, naught but pure influences emanate from their presence, for evil is not of them nor in them.

The presentation of flowers is our highest form of compliment to orator or singer, and by their "voiceless language" heart can speak to heart in a way never given to words.

What more beautiful symbol of friendship, tenderness and love does Nature offer than sweet, delicate, lovely flowers. They contain the language and sentiment of the heart. Gaze into the depth of the pure white lily and see its purity and innocence, look at the modesty of the violet and what an affectionate remembrance is shown by the blue forget-me-not. Then there are the upturned faces of the pansies, each little face having a story of its own to tell.

"Sweet little flower! If skill were mine,
To paint a face alike to thine,
As coyish, and as modest, fair,
Give color true and odor rare,
I'd know my gift to be divine."

Flowers furnish inspiration for noble thoughts; they seem to speak through their expression of countenances. Some seem to smile, some have a sad expression, some are pensive, others again are plain, honest and upright like the broad-faced sunflower and the hollyhock. Flowers are silent but they speak to us as the eye speaks. Many a weary soul without friends or money finds the dreary hours at the hospital brightened by sweetest flowers breathing hope of better days to come.

There is no purer, sweeter adornment than flowers. Weddings, funerals, school commencements, banquets, festivals, flower Sundays, Memorial day, all call for flowers.

How many, many lessons of hope, confidence, patience and truth they have taught. When Mungo Park was traveling in the desert he lay down to die, and as he lay there he caught sight of a flower springing out of the sand by his side and he thought, if God takes care of the flowers in the wilderness he will take care of me and his confidence was not misplaced. When human

words are of little avail how the flowers soothe and what fragrant thought-bearers for our comfort.

"God's dear angels are they in the hour of sorrow;

Their sweet faces simply say, "do thou look up,"

Thou shalt meet thy loved ones on some brighter morrow;

Never-ending joys are thine, do thou drink thy cup."

Flowers add beauty which is essential to a perfect life and flowers are among the most delicate and subtle expressions of beauty God has given to earth, and we ought to know more about them and learn to love them more and this love grows the more we cultivate and mingle with them, and in addition the care of them affords needed recreation. To the genuine flower-lover the pleasure in growing flowers more than compensates for all the care and trouble.

The world is full of people who have been blessed by considering the lilies of the fields and the violets of the meadows. There is no place, no spot in life, where the ennobling influence of flowers may not be felt. Rest, health, strength and happiness will all come to us if we seek for them in the breezy woods, green fields and fragrant flower gardens.

"Come out into the garden where the crimson phloxes burn,

And every slender lily stem upbears a lustrous urn;

A thousand greetings float to you from bud, and bell and star,

Their sweetness freights the breathing wind; how beautiful they are."

A VACATION IN EUROPE.

By Emma Jacobson, Chicago.

Some years ago I joined a party of about twenty tourists on a pleasure trip through the British Isles and the continent.

The voyage from New York to Glasgow in a slow Scotch steamer, although delightful in many ways, was yet sufficiently long to make the first sight of land on the other side a very welcome one, and the wonderful green of the "Emerald Isle"

seemed all the more beautiful after nine long days of gazing into a watery horizon. And then the newness and the novelty of it all was a constant source of delight from the moment that we approached near enough to distinguish outlines on shore.

When I first saw the great green hills rising up out of the ocean, covered over with a network of squares and parallelograms of different shades of green, I was puzzled to know what it was that we saw, and it was a long time before I could realize that a speck on the top of a hill, apparently the size of a pocket handkerchief, was a man's farm, and that what appeared to be green ribbons laid out on the side as if to dry, were other farms, each one supposed to support a family in riotous luxury.

It was an initiation into the smallness of things European—a smallness which we encountered on landing at Glasgow in the tiny railway cars, in the sputtering toy-like engines that could hardly be taken seriously, in the petty economy of butterless bread and sugarless strawberries of a firstclass Scotch hotel luncheon, in the iceless water served at meals, in scant breakfasts of rolls and coffee, and in the cramped homes of the common people wherever we had an opportunity of observing them.

However, it is a wise traveler who strives to adjust himself to conditions as they present themselves, and as soon as we had schooled ourselves to the idea that butter and icewater and sugar were reprehensible luxuries, and that a little mortification of the flesh in the way of uncomfortable railway seats, etc., was good for the soul, we got along admirably.

Our first days were spent in coaching trips through the Ayr country, hallowed by memories of Robert Burns; through the Trossachs, with their clear lakes and ferny woods, full of poetic suggestions of Rhoderic Dhu and Fair Ellen, the Lady of the Lake; through Stirling, with its famous castle, from where we gained a magnificent view of the surrounding country; and then on to dear old Edinburgh, which somehow seems to capture every American heart, with its picturesqueness, its homelikeness, and the intensely interesting historical associations connected with it. Still, the flesh and blood people of today proved more interesting to me than all the ghosts of Mary Stuart, Darnley, Rizzio and other *unworthies* of the past, for the Scotchman of today is well worth studying in all his characteristics. One

of the least laudable of these is his love of strong drink,—indeed, I saw more reeling, tottering drunken men in Edinburgh in one day than one is apt to see in Chicago in a whole year.

The sharpness with which lines of social distinction are drawn between classes was accidentally revealed to me by two individuals of widely varying stations in life. One day, as we were pausing on the bridge over the Leith, I asked the driver of our carriage the reason for the railing around a pretty park near by, to which he replied: "Oh, that's so Tom, Dick and Harry can't get in; only the people what lives on the square have keys to the park." A few days later, at the home of a friend, I met a Scotch gentleman of small means but great pride, who, in explaining to me the necessity of private schools, said: "You know, a man cannot send his children to a school where Tom, Dick and Harry send theirs."

And so, putting the two together, the reeling drunkards in the streets on the one hand, the enclosed park and aristocratic exclusiveness on the other, and we have a fruitful theme for speculation as to how far these conditions may be productive one of the other. And may we not point with pardonable pride to our generous parks in America, where Tom, Dick and Harry may disport themselves without being even required to keep off the grass, and to the further significant fact that the children of these much-tabooed individuals may perchance sit on the same public-school bench with the children of the President of the United States?

But this is a digression and I must hasten onward, for a mere mention of all the places visited and sights seen would make a catalogue too long for one evening's story, and I can only dwell upon a few impressions here and there which seem most vivid at the present time.

Particularly bright in my memory stands out one morning's ride which took us to Abbotsford, the stately home of Walter Scott. Starting from Melrose, where we had stopped at a delightfully quaint old hotel with a garden full of sweet flowers, near the famous abbey, we rode for miles along the narrow glistering white road, bordered with neatly trimmed hedges over which wild roses clambered in profusion; crimson poppies were

nodding in the field, the birds were singing and the sun was shining as only the sun can shine in the British Isles, bright and warm, but with a tempered ray that rarely becomes oppressive.

English roads are not as wide as all outdoors, like some American country roads, and the space from hedge to hedge is so limited that the greatest precision is required on the part of drivers of meeting vehicles in order to avoid scraping each other's wheels; and as for turning around,—it must be that an Englishman never changes his mind, for when he once starts in a certain direction he is bound to go all the way, as the construction of his highway leaves him no chance to retrace his course.

All through the Lake Region of England we rode on coaches, through Keswick and Ambleside, through Grasmere and Windermere, and it seemed as if the picture-books of our childhood had been opened up, and the tiny, rose-embowered cottages, the quaint gable roofs and narrow winding streets which had lived in our imaginations heretofore, all at once became real before our eyes.

There is a trim and tidy appearance about an English landscape, with hedges all neatly trimmed, the grass cut evenly and the forests and pastures free from litter, which reminds one of a house just fixed up for company, and one wonders whether England can ever be caught in negligence. Even the railroads adorn their right of way, and instead of the jagged gashes which mark the progress of our railroads through the hills, one sees nothing but carefully smoothed and sodded slopes which are frequently brightened with flowers.

After nearly two weeks of these delightful jaunts through forests of ivy-clad oaks, past lanes and fields where Shakespeare walked, catching the music of the Falls of Lodore and reveling in the shimmering beauty of the lakes which inspired the poets of Old England, it was almost with regret that we turned our faces towards London, with its grime and smoke and noise, yet we were come for sightseeing, and London could not be left out.

A pleasant excursion from London is a drive to Hampton Court palace, where there is a fine grove of chestnut trees and one of the most beautiful gardens in Europe. Here we saw the famous grape-vine, said to be the largest in the world, and 300 years old. The vines are trained in a network underneath a

glass roof and at the time we saw it, were full of grapes, which, however, looked very sour—perhaps because we were not allowed to take any of them. It is just as well, on the whole, to consider all English fruit sour, for the prices charged are enormous. At the Covent Garden market we found that peaches were held at \$1.50 per dozen, plums equally high, and a bunch of very tart grapes, weighing about two pounds, cost us 75 cents.

We “did” London after the most approved tourist fashion in about five days, and then crossed the channel to Paris,—the place where all good Americans are said to go when they die. While not realizing exactly my ideal of what heaven ought to be, yet Paris is undeniably a beautiful city, clean, well-kept and elegant, with alluring shop windows and gay, attractive boulevards.

We lodged opposite the Garden of the Tuileries, said “garden” consisting of a sandy desert, with here and there an orange tree in a tub, and similar inspiring things. Conventionality of design is characteristic of most of the noted gardens of Europe, such as the famous grounds surrounding the palace at Versailles; the Boboli Gardens in Florence, and the Vatican Gardens at Rome, all are laid out in geometrical designs of bright-colored flower beds, or conventionally trimmed shrubs and hedges. The Vatican Gardens, when viewed from the top of St. Peter’s dome, looked for all the world like a patch-work quilt, such as our grandmothers used to make.

One of the enjoyable drives of our trip was that from Paris to Versailles, a distance of some twenty miles, through magnificent forests, as yet unspoiled by civilization, and past lordly villas and country seats. The road was smooth and hard as any of our city boulevards, and yet the five horses which drew our conveyance (three leaders and two wheel-horses) had great difficulty in drawing us up the hills, not so much due to the greatness of the load as to the poor quality of the horses. The whole five of them put together, boiled down and reconstructed, would scarcely make a respectable team such as a Wisconsin farmer would care to drive. What was true of these horses might also be said of three-fourths of the cab horses which swarm through the streets of Paris, and it is often as-

tonishing to see how little meat a frame of skin and bones requires to keep it upright. Cab fare costs less than one-fifth as much in Paris as it does in Chicago, but then, one only gets the service of about two-fifths of a horse, with an indeterminate fraction of a man as driver,—hence the cheapness.

Leaving Paris one evening just as the rosy hues of the setting sun were reflected back from the waters of the Seine, we traveled all night in about as comfortless a fashion as Americans will only submit to in Europe, and were greeted by the rays of the rising sun as we rolled along the banks of the turbulent Rhone, up to where it emerges, purged and purified, from the tranquil bosom of Lake Geneva.

The waters of Lake Geneva are famed for their beautiful translucent blue, a color which is unique in nature and has never yet been exactly reproduced in art. Here, across the surface of this lovely lake, we caught our first glimpses of snow-clad peaks in the distance, and in the afternoon, after a short ride by rail, found ourselves in a diligence penetrating the heart of the mountain fastnesses which guard the pearl of the Alps, the Valley of Chamounix. For twenty-eight miles we rode along the base of mountains, following the course of the Arve, a sputtering mountain stream, each turn in the road disclosing new visions of beauty.

We entered the valley when all the lower world was shrouded in twilight, but away up above us in the dusky sky there glowed with a soft, ruddy, tender glow, the snow-clad summit of Mount Blanc. Our last anxiety at night, and first thought in the morning was, will the weather be favorable for a good view?—for many a time the mountain is capricious and hides itself behind a veil of clouds or mist; but lo, when we threw open our shutters the sun was shining in rare brilliancy, and before us stood revealed in all its majesty, green base, bare rock, and sparkling, glistening summit.

Ever conscious of the presence of that silent beauty, we wandered up and down the valley, breathing the delicious mountain air, gathering bluebells on the banks of the rushing Arve, and modest forget-me-nots from the brinks of the numerous tiny mountain streams.

We cannot linger long in this enchanted valley, for "Beyond the Alps lies Italy," the land

".....where the cypress and myrtle,
Are emblems of deeds that are done in their clime?
Where the rage of the vulture, the love of the turtle,
Now melts into sorrow, now maddens to crime."

The glamour of poetry and romance with which the bards of all ages have invested Italy for us, still possesses our minds as we catch the first glimpses of silvery olive groves, fair villas and picturesque towns set up high on the tops of bare brown hills. Some illusions are bound to be dispelled when we come face to face with the "dago" in his haunts, and encounter the flies and fleas and smells of Italian cities; but picturesque the Italian must ever be, and interesting, too, with his nervous, excitable manner,—a type so totally different from our calm, self-controlled Anglo-Saxon people. The amount of nervous force expended in shouting and running and gesticulating before a train could get under way from each station, seemed sufficient to run that train for several miles, if properly applied.

The habit of the Italian people of changing night into day is rather trying to the tired tourist who desires a good night's rest, for one is liable to be awakened almost any hour up till daybreak by shouts of laughter and loud talking in the streets, while during the hours of daylight one is just as apt to stumble over prostrate forms of sleeping Italians in doorways, on the pavements, or almost anywhere where nature happens to succumb to the demand for rest.

In Genoa we were struck by a species of architectural painting both unique and ingenious, in that it sought to reproduce on the smooth side walls of houses by means of the paint-brush the same effect as that presented by the rough-hewn and probably more expensive real stone of the front. More curious still were the windows painted on the walls, and the imitation was so clever that it often became difficult to tell which was the real window and which the sham, as in most cases, lace curtains, looped exactly like those in the neighboring window, were reproduced with painstaking care, and even a bird-cage was sometimes added, to make the deception more real.

We visited the famous Campo Santo at Genoa (the burial ground of the city), which consists of a huge parallelogram of gray stone, with an open gallery of white marble extending around an inner court. All along the gallery are marble monuments of exquisite beauty, some groups representing biblical scenes, others the family of the deceased in life-sized figures, gathered with bowed heads about the tomb.

On asking our Italian guide if all the dead of the city were buried in this vast and splendid mausoleum, he replied: "Oh no, only ze rich people are buried here." Further inquiry developed the fact that "ze poor people" are buried and allowed to remain in the ground contained in the inner court for a number of years, the length of time depending on the amount of money that the family of the deceased can afford to pay for the privilege of his being covered by Mother Earth, then the remains are disinterred and dumped indiscriminately in one great heap. This bone-yard is not one of the show places of the city.

The ride from Genoa southward presents a succession of beautiful pictures to the eye,—the blue Mediterranean dashing its snowy surf against jutting brown rocks, a villa here and there surrounded by blooming oleanders, stretches of sandy beach with brown-skinned Italian children sporting in the waves that rolled up high on shore, and over all the cloudless brilliancy of the Italian sky,—all this gave an impression of life and warmth and color truly Italian.

The farther south we go, the sparser grows vegetation, the barer the hills, the meaner the houses, and as we leave the sparkling Mediterranean and enter upon the Campagna surrounding Rome, the desolateness of the country becomes absolutely painful.

After a week's stay in Rome, we turned again northward, and the green fields of Tuscany and Lombardy afforded a grateful relief to the eye after the barren waste of the Roman Campagna, and when we caught sight of a field of thrifty Indian corn, our joy was complete. All along the railroad were rows of mulberry trees, with grapevines planted midway between and trained up the tree on either side, and the rapid motion

of the train produced the curious effect of the trees joining hands and engaging in a merry dance along the way.

Then came one of the most delightful days, when on a slow river boat we glided peacefully down the Rhine, with its vine-clad hills and picturesque ruins, and landed late in the evening at Cologne. Next day we visited the Cathedral, with its exquisite turrets and spires of Gothic design, then on again across Belgium to Brussels, where we spent two days. One impression received in Brussels I cannot pass without mentioning. We were awakened in the morning by a perfect pandemonium of yelpings, barkings, and snarlings, and on looking out, beheld the great market place covered with small vegetable carts to which were hitched big, sturdy dogs, each of which seemed to be on a war footing with his neighbor. It was a curious spectacle, and we were impressed still more with the hardness of conditions in Europe, where even dogs have to work.

From Brussels we went to Antwerp; there took a channel-boat back to England, and when once more in London, prepared ourselves for the homeward voyage.

And now that I am near my journey's end, I feel that I have been able to give very little of special interest to the horticulturist; had I known as much of horticulture then as I have since learned from the Wisconsin State Horticultural Society, my observations might have been of more value in this line; but as it is, I offer this rambling sketch to give some idea of how much can be seen and enjoyed by busy people in less than three months' time; and I will say that there is nothing so restful in the world as to put the ocean between one's self and one's business for a short time. The expense of a trip to England and France, and perhaps Holland, need not be much greater than that of a trip to California, and the interest of the journey is certainly much greater. There is so much that is beautiful and instructive to see, and even the drawbacks of life there have the advantage in that they will cause one to come back a ten times better American than before.

WEDNESDAY MORNING.

On motion of Mr. Edwards, Mr. Patton of Iowa was made honorary member.

On motion of Mr. Laiten, Prof. Webster of Ohio was made honorary member.

Mr. G. J. Kellogg moved that the thanks of the society be extended to the ladies who had furnished papers the preceding evening, and that Miss Trelevan and Miss Jacobson be made honorary members of the society. (Carried.)

DEVELOPMENT OF PIERCE COUNTY ORCHARDS.

By Miss Gertrude Cairns.

Pierce county, except for a narrow strip along the Mississippi, has been settled in a little more than a generation. Indeed there are many today who can recall the time when "the big woods" covered the greater part of the county, and deer were no uncommon sight in the neighborhood of its courthouse. Today those woods are fast disappearing,—much too fast for those of us who are lovers of trees,—farms have been hewed out of the solid forest, and fields of grain wave where a few years since stood the huge maple and elm. The log house, a not unfamiliar sight in my childhood, has for the most part disappeared or has been relegated to some humble use as a farm outbuilding, while comfortable and attractive homes tell of the prosperity of the farmer. The country is no longer new.

Yet the change that has taken place in other directions is even more apparent than in the disappearance of the stumps from the cultivated fields. No longer need the housewife depend for fruit upon dried apples brought up the Mississippi, upon tomatoes,—poor excuse for the modern fruit of that name,—or pumpkin soaked in vinegar. The wild grape and elderberry are still gathered in some localities, but the wild plum is disappearing. Fruit is no longer a luxury. Nor is this due to the improved facilities for shipping. Considerable

fruit is imported, but the farmer of today has begun to awaken to the fact that home-grown fruit is the best, and a change is rapidly taking place.

It was not merely because the settler was too busy clearing his farm that no fruit was raised in this section. The opinion was prevalent that the country was not adapted to fruit-growing, and it is only within very recent years that people have come to believe the contrary.

There were a few, however, even in those early days, who had faith in the future, and who sought to transplant the orchards of their boyhood to these western wilds. Among the number was G. W. Cairns, who, in the '60's, bought some Transcendent and Hyslop crab trees, and set them out in a nursery row in the hotel yard, transplanting them in the spring of 1867 to his lot in what is now the village of Ellsworth. These, so far as I can learn, were the first apple trees ever set out in Pierce county. Certainly they were the first in that part of the county. (And now, I want to ask your pardon for the frequent mention of my father in this paper. It is not that I am seeking to give him undue credit, or asking your praise for his work, but I believe no true history of the development of fruit growing in our vicinity could be written without reference to the part he took in it. And, too, some credit redounds to you as well, for it was the inspiration coming from your reports and the meetings of your society which he was privileged to attend, that encouraged him in his work.) To return to my topic: the following fall he visited the southern part of the state, and from there took home with him two barrels of apples grown in the orchards of Middleton, Dane county. The seeds of some of the finest of these were planted, and a number of trees came into bearing. Indeed, some of the apples were shown on your tables in the early eighties. Meanwhile the hardiness of the crabs had been demonstrated, and the Duchess of Oldenburg introduced. Here and there throughout the county enterprising farmers or gardeners had set out small orchards of those varieties, though the Transcendent largely predominated.

It was just at this time that the Pierce County Fair was organized, and Father was asked to take charge of the fruit de-

partment. The display was meager enough, and yet I will venture to say that few exhibits attracted more attention; for my father had a fine array of his seedlings which were just in splendid bearing, and they provoked abundant comment. I remember well my childish amusement, as I heard again and again the assertion that those apples never were raised in Pierce county, and even Father's invitation to visit his orchard but a few rods from the grounds was not wholly convincing to the crowd that gazed at his apples. People went home with the idea that apples, and large ones, could be raised in Pierce county. The time for the nurseryman was ripe, and he improved it. His agents went about the county advertising splendid varieties of fruit and many were induced to buy. The varieties were usually those which were recognized as leading in the fruit regions of the east, but in nearly every case were not hardy, and winter-killed or blighted, dying in a few years. All this only confirmed the people in their idea that fruit growing in this locality could never be a success.

Then came the severe winter in the middle of the eighties,—I do not remember the date, though some of you may,—when a warm, moist fall, so spring-like as to start the buds, was succeeded by extremely low temperature. Many of the seedlings and all of the standard varieties, in our orchard, except the Duchess, died. But Father was not discouraged. That was an exceptional year. Orchards all over the country suffered. There were new seedlings to take the place of the old, while some of those still survived. Then, too, he had become interested at your meetings in the Russian apples, and they fitted well with his theory, that what was needed was to develop varieties suited to withstand the peculiarities of our climate, or to introduce those which had withstood similar conditions elsewhere. He talked fruit at every opportunity. He found congenial spirits in Mr. Hugh Bell of Farmhill, and Mr. A. C. Sanford, then of Ono, who had already thriving little orchards started. The Fair was always an opportunity to compare notes on varieties and methods of treatment.

It was then that fruit growing in Pierce county took a new start. When the Russians came into bearing and the fruit was displayed at the County Fair, interest was aroused. People

had learned that all varieties would not grow there, and began to ask as to which were the best. Each year new orchards are set and fewer trees die because greater care is taken in choosing them. And now as you drive about the county, and especially the eastern half, that which was once a hardwood forest, you find nearly every farm adorned with a thrifty little orchard, some not yet in bearing, while others furnish an abundant supply for the family and often a surplus for the neighboring market. And should you visit our County Fair, some of you might think well to look to your laurels, for the fruit display is one that need not shame the better adapted regions of our state.

The past year was recognized by all as a poor one. Yet a lady who had just returned from Buffalo, and was boundless in her enthusiasm for the Wisconsin display there, stopped suddenly after a reiteration of "I am proud of Wisconsin," to look about and remark: "But there are bigger apples here than any I saw there." Allowance may be made for her local pride. Yet Wolf Rivers fourteen inches in circumference are not small. However, the Wolf River is not a favorite except with those who like big apples. The Wealthy is still popular and will remain so until a late apple has been found that equals or surpasses it in keeping quality and flavor, as well as yield. The Northwestern Greening, which has been introduced to a considerable extent, does not seem sufficiently hardy to warrant its recommendation, though some good plates were on exhibition. Personally, I should like a test made of seedlings from that apple to see if there could not be developed a variety, retaining the qualities of the Northwestern Greening, but being sufficiently hardy to prove profitable. The Longfied and the Peerless are gaining in popularity, while the Hibernial seems rather on the decline, though some still praise it. It is a good bearer, as a rule, but its quality is inferior.

Of the early apples, the Yellow Transparent is the favorite, rather than the Tetofski, though both are raised. A fall variety that seems at present very promising in our locality but has not been tested long enough thoroughly to prove its hardiness, is the Antinovka. Those having it agree that it bears an

abundance of large apples that sell well in the local market. There are a number of trees of the Tallman Sweet in bearing, but several pronounce them not hardy.

Of the crabs, Whitney No. 20 leads in the newer orchards, though Mr. Terry, of Plum City, who has the largest crab orchard in our county, favors the Orange and Meade's Winter. The Martha is another that seems well liked.

Pierce county was so fortunate in its native plums that the named varieties have been but slowly introduced. But three varieties,—Ironclad, Weaver and De Soto,—have become at all common. These seem fairly hardy. Two varieties of the native plums were common in the early days,—one found in the woods, thin-skinned and generally sour; the other native to the prairie regions, with a thick skin often covered with a bloom, and, when fully ripe, quite sweet. By selection and growing of seedlings, some very desirable plums have been developed among these garden grown natives. They bear but slight resemblance to their ancestors, which struggled against prairie fires, or eked out an uncertain existence in the tangled thicket.

Few attempts at raising cherries have as yet been made, though there are a number of trees in the county, but so far the profit has been rather to the birds than to the farmer.

In discussing fruit growing in our county, I have not as yet spoken of the different conditions existing in different parts of the county. A portion of Pierce county, chiefly along the Mississippi, was open prairie, and it is difficult starting an orchard there. A windbreak and other protection are necessary, and it would be hardly wise to try any but the harder varieties at present. Those can be grown, however, if a little care is taken in choosing the location, slope, etc. Again, in the valleys the early and late frosts are a decided disadvantage, and these combined with the sandy soil may make apple growing difficult or impossible. But the greater part of the county lies well up on the ridges, and the soil is largely clay loam. Here there is no need of afilure.

One of the chief causes of failure in the past has been neglect. The trees were set out and left to care for themselves. The farmer who would not dream of securing a corn or potato

crop without careful cultivation, sees no necessity for giving the slightest attention to his orchard, and the most cultivation that it gets is that given by the pigs,—for the combination of hog yard and orchard seems a very common one. Mulching or pruning, except spasmodically so as to do more harm than good, is rare. And then he grumbles because his trees do not bear well. This has been the rule in the past, but there seems an awakening of interest at present that is quite encouraging, and it is to be hoped will result beneficially.

I have given you a brief outline of the struggles, successes, and failures of our Pierce county orchards. Measured by your standards we have accomplished little at present. We do not look for great things in the future. Pierce county will never rival the more favored regions of this or other states in fruit growing. It would be foolish to expect that. There is nothing that indicates it. What we have done and are doing is to prove that fruit, particularly apples, can be successfully raised in Pierce county,—raised, not for the large markets, but for home consumption. We do not look for extensive orchards in that region. There are too many disadvantages to be overcome, and the large fruit grower can do better elsewhere. But we see no reason why the farmer of Pierce county may not raise all the fruit for his family use, and enough to supply the neighboring markets. He has much yet to learn and he may never use thoroughly scientific methods. But when each farm is provided with a thriving orchard to add to the pleasure and home comfort of the family will not the Pierce county orchard have attained to a worthy ideal? To this end let us work.

Mr. Hatch, Chairman of committee on Nomenclature, asked for instructions and a motion was carried that no variety should be named until it passes from its place of origin and is tested somewhere else.

Mr. Philips: I went up to Pierce county some years ago to judge some fruit and name the varieties that they had forgotten the names of, and I was astonished,—it was a small show of fruit, but it was the quality of the fruit, as Miss Cairns

says; there are a lot of these old fellows around here that would have to look after their laurels on a show of fruit. I never saw finer Wealthies and finer Pewaukees and Wolf Rivers than were exhibited on their tables; and it is evident that there are parts of Pierce county that are well adapted to the raising of fruit, and I think the people there should make an effort to try what varieties are best adapted to the climate up there.

Mr. Toole: It is pretty hard for us to discuss anything we cannot criticise; when a paper is so good that no one can criticise it, we are cut off, and that is about the way with this paper. I would like to ask a question though, whether there are any of those seedlings that have been tried that they think they can tie to.

Miss Cairns: I cannot answer that very fully because I have known too little about it. I know there have been two or three fine seedlings that have been exhibited at our fairs that seem quite promising, but of course they have not been tested elsewhere and we cannot tell how they will turn out.

Mr. Gibbs: I have been acquainted with G. W. Cairns for a great many years, and during the entire time when he was experimenting with seedlings, I had conversations and correspondence with him. Over there on the table there are two varieties that he thought the most of. The one that he regarded as the most valuable after the longest test was what appears there as a small-sized, yellowish apple, and it somewhat suggests in both color and quality the Newton Pippin. The other one that was his second choice, as I remember, was the large striped apple; it looks as if it might be a seedling of the Duchess, and I understand the committee have awarded a second premium on it on seedlings.

Mr. Hunter: While varieties are being discussed, I would like to ask if anyone here knows anything about the Morris apple. I think it originated in this state, although I am not sure.

Mr. Philips: What is known as the Morris apple in this state originated in Vernon county. They brought a nice display of them to Omaha. It is a rather dull red color, and that has been known there for years as the Morris apple. I think it has been sent out over this state as the Morris apple. I

do not think our society named the Morris apple that Mr. Springer had; I think it is a local name, I think he named that himself.

PIONEERS IN HORTICULTURE.

By William Toole.

(Read at the State Horticultural Meeting.)

C. S. Harrison of Nebraska, in a recent number of *American Gardening*, says: "Peter Gideon and Patten have moved the apple belt 300 miles farther north." As the years go by, our gratitude to Peter Gideon will increase, with honor to his memory, for what he has done in the interest of apple growing; and we hope that it may be many years before we may be called upon to change our present thankfulness to Charles G. Patten for what he has done and is doing for fruit culture, to eulogies in his memory. We are grateful to these men, not only for the direct benefit of new varieties adapted to our northern conditions, but also for encouragement and incentive for others to work in the same direction. Still we feel in Wisconsin that the apple growing field is not bounded on the north by the line of adaptation of the two varieties Wealthy and Patten's Greening.

Fortunately we have two varieties which we believe are more hardy than the two just mentioned, and we do not yet know our northern limitations, but we do know that we have a number of varieties which can be grown with encouraging success much further north than we formerly supposed. As this knowledge is the result of dearly bought experience of those whose faith overcame discouragements, we feel that we should be prompt to pay the debt of gratitude we owe to the many pioneers in fruit growing, whose work has given us our present knowledge of adaptation of varieties to Wisconsin.

If Father Daniels had not given us the Northwestern Greening, and W. A. Springer the Wolf River, it would have been harder for us to have won our laurels at Omaha and Buffalo. And how we would have missed it if we never had a show-

ing of McMahon! Surely we are thankful that Freeborn and Hatch brought this variety to our notice. And what would we do without the best of the Russians? If we have not found in them just what we sought for, still we have reason to be thankful that A. G. Tuttle and his co-workers gave us Longfield, Anisim, Yellow Sweet, Transparent, Lowland Raspberry, Repka, Saxonian and others.

If Charles Hirschinger had never done any other good thing besides making known to us the good qualities of Scott's Winter, we would thank him for that alone. Plumb's Cider is valuable enough to be a memorial to J. C. Plumb. We seldom mention the name of Orange Newell, as he was not an active member of our State Horticultural Society, but the variety bearing his name is a lasting honor to his memory.

Friend Chappell, with horticultural enthusiasm and generous readiness to share with others his dearly-earned knowledge, has given through our Horticultural Society continuous and lasting influence for the benefit of fruit culture.

The late G. W. Cairns of Pierce county during his life did much to encourage fruit growing in that part of the state, besides leaving some very promising seedlings, and did not fail to give credit to our society for the inspiration of its teachings. Lasting will be our regard in honor of the memory of George Peffer of Pewaukee, not alone for the Pewaukee apple, but for a life devoted to the welfare of his fellowmen.

We are accustomed to associate the names of the introducers with varieties of apples we value most highly, hence it is strange we say so little of the late Judge Clark of Baraboo, who introduced the Duchess apple to Wisconsin.

Our worthy president, Dr. Loope, and his associate, A. A. Parsons, are bringing to our notice some good things, which will honor their memory. A. J. Philips, with his seedlings and what he has done to make us acquainted with other Wisconsin seedlings, has helped to broaden our knowledge of our opportunities, and, if friend Barnes has not yet established the fame of any seedling, he has with others done his share to carry the apple belt farther north.

Our lamented friend and co-worker, B. S. Hoxie, even if he was not an orchardist, did his share to establish fruit grow-

ing in Wisconsin, for what would pomology amount to in Wisconsin at the present time if we never had a Wisconsin State Horticultural Society? And the value of our state society for good is the sum of the usefulness of its members.

We have lost many workers in the cause of horticulture, and others must pass away, but their work will be continued and we hope improved upon by the younger horticulturists coming forward. It would seem as if a summary of past achievements in creating, developing and testing varieties might lead to more systematic work with more certain results. The trial orchards established by the Wisconsin State Horticultural Society will do much to help make more progress in acquiring horticultural knowledge and experience than has been made in the past. Future experiments in bringing forth new seedlings must naturally yield more prizes than in the past, because there are now so many orchards which contain only approved varieties, so that seeds may be selected which surely have good parentage. The outlook is encouraging, and we surely must believe that when the present life of our State Horticultural Society has been doubled, those then living will have a much greater variety of fruit than we now have, for our development of varieties must not be confined to apples.

Have we done all we could to make pear growing a success in Wisconsin, or has our fear of blight been too great?

Our horticultural brother Harrison of Nebraska would encourage the extension of peach growing in that state and would carry the peach belt further north. We ought to raise more peaches in Wisconsin, not, of course, as a commercial fruit, but as an additional source of pleasure to the family with a treat of better fruit than is brought into our markets. If in the past one-fifth as much effort had been expended in developing peach culture in Wisconsin as has been devoted to apple seedlings, many bushels of peaches would have been raised in Wisconsin the past season.

The improvement of our native plums is in good hands, and we are thankful that Professors Goff and Cranefield are doing so much for us in that line, but there should be more done with seedlings of the domestica plum, and also with crosses of our natives with the domesticas and Japanese.

Friend L. G. Kellogg has given an encouraging impetus to cherry culture in Wisconsin, but who will take in hand the improvement of our native fruits?

Our native cherries are being well looked after and in good time we shall hear of results. Cranberries of course are on a firm basis, and if the original peach was as poor a fruit as we sometimes read of, we feel that we might have great expectations for our native apples, hawthorns, viburnums and blueberries.

Among the many who have done pioneer work in testing ornamental trees, shrubs and small fruits, we thankfully remember what we have learned from our departed brother, J. L. Fisk, and our still present Geo. J. Kellogg.

This paper is not offered to our society with the thought of mentioning all who have worked for the advancement of Wisconsin horticulture but rather that we may feel how much gratitude we owe to others for present blessings and realize how much incentive we have, with our better opportunities, to work for ourselves and posterity.

IMPROVEMENTS IN ORCHARD FRUITS.

By C. G. Patton, Charles City, Iowa.

Whenever I approach this subject, it is with a sense of delicacy, because for more than thirty years my life has been so inseparably interwoven with the effort to improve our fruits, and outside of the nursery and orchard work has occupied so much of my time and thought that I cannot well treat upon it without appearing to be more to it, and in it, than I could wish.

Coming to Wisconsin at the age of sixteen, and having lived in the state for sixteen years, being always especially interested in fruits, and then moving a hundred miles west of the Mississippi in the same latitude and in an open prairie region, gave me better opportunities for comparison than fell to the lot of most of the northern horticulturists.

The drier climate and soil conditions that existed there soon forced the conclusion upon me that original and thorough ex-

periment work was a necessity. And in my early efforts to reach a correct estimate of the work before us I was greatly indebted to the men of Wisconsin, like Pepper, Plumb, Tuttle, Stickney and Wilcox; and I would not forget to add to the number the name of C. S. Abbott, whom some of the older members of this society will remember as a writer for the Wisconsin Farmer; to him I have felt especially indebted for the more scientific character of his writings.

Before moving from this country to my present home, in 1864, I had begun to reckon with climate influences on plants and trees. And, after observing the different varieties in Dane county, Wisconsin, and Floyd county, Iowa, I was fully convinced of the necessity of more than merely collecting and testing the then present varieties.

In the summer of 1869, I visited Wisconsin and received from my brother-in-law, Mr. P. S. Eastman, a few very fine Duchess and Lowell apples, grown by his father, Mr. Daniel T. Eastman, nine miles north of Portage. From the seed of these Duchess grown in an orchard of eastern varieties, sprang the Patten Greening, now thirty-one years old and in strong bearing condition.

Beside it the same spring were planted three Wolf River trees received from that most generous and enthusiastic horticulturist, Wm. A. Springer. Two of these trees have long since died, and the third is a broken wreck, never having borne one-twentieths as much as the Greening. I present to you a photographic view of these trees as they now stand.

Standing on medium prairie soil twenty-one years beside the McMahon, its productiveness is more than ten to one of the latter, and markedly superior to it in every respect.

In a like number of years of the former and latter planting, Mary, Martha, and others of Mr. Springer's distributions have all failed as root grafts; and Scott's Winter, Magog Red Streak, and others from Vermont have either died or are nearly valueless, and varieties from Canada have proven no better. Compared with a large number of Russian sorts for a like period, nothing approaches it in bearing and value except the Longfield, and that is not as hardy.

In 1874, seeds of the Golden Russet were planted, producing

a tree that is far hardier than its parent, and of which Mr. L. G. Clute, a large orchardist near Greely, Iowa, said that the fruit brought him one dollar a barrel more than that of any other variety.

Again, seeds of the Fameuse planted the same year gave a sort of which Mr. J. L. Hartwell of Dixon, Ill., said that his wife would not allow him to bring in any other apple for sauce so long as it lasted, and others praise it highly. It bears young, is fifteen per cent. more hardy than its parent Fameuse, a third larger, and a good dessert apple. Seeds of the Perry Russet have given similar results.

With such evidences pressing upon my attention almost from the very beginning, do you wonder that I became an enthusiastic advocate of planting the seeds of the best adapted varieties, and in large quantities, in all the varying climatic divisions and subdivisions of the great Northwest?

The evidence to my mind was conclusive, that upon this practice hung the future prosperity of horticulture in all the region to which I have referred.

The first comparative test was made thirty-one years ago of Duchess and Lowell seeds from Mr. Eastman's farm; of large Red Siberian seeds grown at Fox Lake, and some seeds of eastern grown apples, I think the Baldwin. The Greening was the resulting success; Lowell seedlings only half hardy; eastern seedlings very tender; Siberians nearly all hardy and nearly all top-grafted to Pewaukee at three years old, uniting freely and growing with great promise until the winters of '83-4 to '86-7 killed every one of them.

I scarcely need say to you that the confirmation of my theories was altogether too practical for my purse. But it taught me a lesson in the breeding of the apple, and while other presumed hardy sorts from every source were tried, the lesson that it taught was never forgotten. It taught the lesson that eastern Wisconsin was not likely to produce new fruits that would be adapted to the prairies of northern Iowa, but would produce new sorts suited to its own climatic conditions. And, henceforth, Fameuse, Tallman Sweet, Golden Russet, St. Lawrence, Walbridge, and trees of like hardiness were sparingly planted either in orchard or nursery.

It is well known to breeders of animals that one out of several has better form, better constitution, better disposition, in fact, is an all-round superior animal to scores of others equally well bred. The same law holds good in the varying grades of perfection in a hundred seedling apples.

And while making a few more statements in reference to the Greening apple, let no one think that I would advise him to dig up other varieties and plant this tree, or do anything that would redound to other than the true interests of horticulture.

Adaptation to especial climates is the rule, and widely adapted varieties, like the Duchess apple and Concord grape are the extreme exceptions. Breeding trees and plants from the "survival of the fittest" or most perfectly adapted varieties, is the key that will unlock the door to success.

With Charles Darwin I believe that varieties develop into families, sub-species, and species. Acting upon this thought, seeds were gathered from the orchard that once stood here on your University farm, and from my own small orchard planted in the spring of 1871, from the interlocking limbs of Fameuse, Golden and Perry Russets, surrounded by Duchess and Wealthy, and also from Duchess top-grafted with Grimes' Golden and Golden Pippin. The result has been some distinctly well marked crosses of good quality and increased hardiness.

It so happened in the process of natural selection that this Patten Greening is one of those units of plant development that combine more of hardiness, perfection of leaf, vigor of tree, adaptation to varied soils, large and uniform size of fruit, excellency of cooking qualities and early and abundant fruitage, surpassing in this last respect any apple known to the writer. In one instance, about fifty miles from St. Paul, the past year, there was gathered from each of several trees between five and six bushels to a tree, from trees only six years planted. Longfield about three bushels, Wealthy scarcely a bushel, and Ben Davis two bushels.

In one other respect this apple is most remarkable. While Prof. John Craig was Superintendent at the Experiment Station at Ottawa, Canada, he tested 47 varieties of apples for drying purposes. The Wealthy made 4 lbs. 8 ozs., Longfield 5 lbs.

15 ozs., Malinda 8 lbs. 7ozs., Fameuse 6 lbs. 14 ozs., McMahon 8 lbs. 2 ozs. and Patten Greening 16 lbs. It made six pounds to the bushel more than any other of all the varieties tested, and nearly double the amount of any apple at all adapted to our climate.

Looking into this question of plant breeding a little further let me ask who ever heard of a Baldwin, a Roman Stem, a Spitzenburg, or a Jonathan Seedling of any value?

Is there not great significance in the fact that nearly every one of these apples including Northern Spy, Rhode Island Greening and other valuable eastern varieties were so stamped by their climatic environments in their constitutions and sexual organs, that they never could succeed at all west of the Great Lakes; or, if enduring are unfruitful.

And is it not of more significance to us who are struggling with this problem of originating varieties suited to our needs, that Wine Sap, Ben Davis, Talman Sweet, the Russets, Perry and Golden, Seek-no-Further and the Fameuse; the first originating in New Jersey, the second in Kentucky, the third in Rhode Island, the fourth in New York and England, the fifth in Connecticut and the Fameuse in France, that these varieties have gone from three to five hundred miles beyond the Lakes and have spread over a wide stretch of latitude into the prairie regions?

Should we not be attracted by the fact that the beautiful Winter Wine Sap originating on the eastern shore of the Continent should be at home in Tennessee, in Arkansas, in Missouri, in parts of Iowa and Nebraska, and that it has become the parent of large, good and highly colored apples?

Can we possibly ignore the fact that the excellent, aromatic and highly colored Fameuse, originating beyond the ocean, is at home in nearly all the apple growing sections of this country, and that it has a wider range of latitude than any other dessert apple, and that it has already produced several most excellent varieties?

The McIntosh being one of them, and of decidedly superior quality and more beautiful.

Again a seedling of this sort originating with your speaker

and shown at the Iowa State Fair in 1896, was readily accorded the first premium for the best seedling.

The tree is ten to fifteen per cent. more hardy than its parent, is a third larger and hangs well to the tree; has a mingling of sweet and acid something like Grimes Golden, and is of the most brilliant color.

Again, another seedling of the Fameuse originating with me in 1874, to which reference has been made, is of fine color, an early and continuous bearer, large in size, and of dessert and cooking quality. These and other sorts stamp the Fameuse as a prepotent variety to which our Northern State Experiment Stations should look for improvement.

Crossing with nearly allied varieties, or with hardy and distinctly marked ones is a well recognized law of advancement; and there is no longer any reason for the haphazard breeding of fruits.

Even the farmer horticulturist, by taking note of the opportunities in his orchard, and selecting the very finest specimens of the very best adapted varieties for his planting, can be almost as sure of success as can the intelligent breeder of animals; and with the added chance that he may secure a Western Baldwin, an improved Wealthy, or possibly a delicious Northern Grimes Golden.

Mr. Gibbs: The Patten's Greening was a seedling of what apple?

Mr. Patton: Duchess of Oldenburg.

Mr. Gibbs: And what was the other side of the parentage?

Mr. Patton: Well, I do not know, only that I suppose it was Rhode Island Greening.

On motion of Mr. Converse, Prof. Blair, of Illinois University, was made an honorary member.

THE PRUNER'S PROBLEM.

By Prof. E. S. Goff.

"During the summer of 1898 we had a good apple crop in Wisconsin. There was one orchard that I visited, that had a fine crop of apples, the trees were all well loaded, that is, most of them, and the crop was very large, but the trees in this orchard were old, and the fruit on most all of the trees was small or undersized. It was a good crop for this orchard. Across the road from this orchard was a young orchard that had been planted about eight years I think. The first orchard that I spoke of had been well taken care of for ten years, it had been sprayed annually once or twice or three times; the trees had been pruned every year, the ground had been cultivated a portion of the time and had been manured to some extent. The young orchard on the other side of the street had been neglected. The ground was in grass, so far as I know the trees had been sprayed some, but they had been only partially pruned and the orchard was not what we would call well taken care of. The trees appeared thrifty, but they evidently had made a slow growth, at least not a very rapid growth. The apples in this young orchard were very fine indeed, I think I never saw such a fine collection of apples, on the whole, as I saw in this orchard. When these apples were sent to market, they sold for about a dollar a barrel more than those from the old orchard that had been well taken care of. The question occurred to my mind at that time what was the reason why those young trees that had been poorly taken care of yielded so much better apples than the old trees that had been well taken care of, and that question has been with me more or less ever since. I have been thinking on the subject and reading and experimenting to some extent, and observing, and I have been trying to apply my philosophy to the case.

Of course it is a very easy way to dispose of that question by saying that young trees are thrifty and vigorous and, therefore, yield the better apples, but that does not satisfy me entirely.

An apple tree is not like an animal in all respects; an apple tree is in one sense a colony rather than an individual. To illustrate what I mean, we can take any bud off from an apple tree and insert it in another place on the apple tree, and if the operation is successful, the bud will grow just as well. We can cut off a hundred buds and another hundred buds will grow on again. We can take a portion of the wood from a young apple tree that is vigorous and we can graft it on an old tree that is not vigorous, and the graft will follow the parent; that is, the graft will be feeble like the old tree, will not grow much. In an animal, on the other hand, we cannot duplicate parts. If we take a part off the animal, that part is gone, and the animal is short just that much. We cannot inter-graft, we cannot reproduce parts to any large extent. To say that a young animal is vigorous is all right, but to say that the same law applies with plants as with animals, I do not want to accept fully. I think we should be able to explain on physical principles the reason why a young apple tree bears larger fruit than an old apple tree and that is what I have been trying to do. Before I begin this explanation I want to spend a moment in explaining the growth habit of a tree.

In the first place, we have the root system which absorbs water from the ground and brings this water together at the base of the trunk and transmits it to the trunk. The roots have an absorptive system of their own and their nature is to draw in water with more or less vigor. Then when the water is taken to the trunk, the fibres of the trunk tend to lift the water by capillarity, and the buds above are not only expending the water above, but they are filled with protoplasm which has an affinity for water, and so we have a force that draws the water from the roots into the top. It is a principle well known in physics that when water passes through a tube it will pass with more force through a straight tube than it will through a crooked tube, and that every bend we make in the tube would reduce the force to that extent. It follows that the buds of an apple tree, or any other trees, that are in the most direct communication with the axis of growth, with the trunk, are the ones that will receive the most water. Every time the branch grows, that branch does not

receive quite as much water as the branch before it turns, and if that branch subdivides, the secondary branch receives less than the primary branch, and so on, the more it branches the less water it receives, and the less vigor it has and the less it grows; it is this principle that determines the form of the tree. You know, as the tree tends to grow upright, the terminal buds receive more water than any other buds, because they are in the most direct line with the source of water; every branch that grows loses somewhat in vigor. By and by, when the tree attains a height so great that the distance from the roots is so great that it over balances the fact that the terminal buds are in direct communication with the axis of the vigor, the uppermost branches will dominate, and after a time the tree will come to an equilibrium, the branches will grow just as much as the terminal shoots, and we will have a full grown, developed tree.

Now, if we examine a young bearing shoot and bearing branch of a young apple tree, of which I have a specimen here, I have tied little pieces of lath about the points which mark the seasons of growth. I have here a portion of the tree that grew last summer. As you all know, the buds are small and flat and close to the wood, the terminal bud is the largest and strongest. If we go back one year, we find there are buds that began to grow out that have received water enough to start a new growth. At the beginning of the season, the whole tree was full of water, the roots had been at work pumping in water gradually, there had been no leaves to evaporate the water, and so the tree had been stocked with water and when growth opened in the spring, all the buds were started into growth. Pretty soon the terminal buds, being the most vigorous and in most direct communication with the branch, got the start of the others, and took all the water, and when these could not grow any longer, they grew out about an inch and then they stopped. That was what occurred during the season before the last season. Now, if we go to the season before that and examine it, we find there was a similar short growth that started in the spring, but we will notice also that there are certain scars here which, if we are acquainted with the history of the tree, we know to be where flow-ers opened. In other words, the part from this point to this

point, which grew in the summer of 1899, that had flower buds in the season of 1900, and those flower buds opened in the spring of 1901, and having opened, of course they either dropped off, or made a fruit, and the twig ceased to grow at that point, because when a flower opens, that is the end of the life-cycle of that bud, it may form a fruit, if it does, the fruit will mature, and drop off, but that will be the end of the growth in that direction. That is true of all buds. But when these flowers opened, no more growth could occur in that line, therefore, the force of the tree was exercised into some of the smaller buds beneath, and we had branch buds starting out. If we go down still further, we find that there are two places on each one of these spurs where the flowers have opened. In other words, this is a year older and these spurs have blossomed twice. We might go on down the stem if the same were older and longer, and we shall find that every time the spur blossoms it makes a new series of branches, for the reason that the growth stops whenever the bud blossoms. By and by we will come to a condition something like this in old trees. This you will recognize as an old fruit spur, we will find that these have blossomed six or eight times, which shows that this must be six or eight years old at least, and in some years they do not blossom at all, and then of course we simply lose a year.

Now, the point that I am trying to make is this, as I said, every time the stem branches, a little less vigor occurs; the sap will not pass through a bend as readily as it will through a straight line, simply because the water follows the lines of the least resistance. It follows that every time this fruit spur flowers and branches, that it will receive less water than it did before, and consequently the fruit that is borne on that spur will be smaller, because the size of the fruit depends very largely on the amount of water the spurs receive. Now, if my reasoning is correct so far, the conclusion that we will have to come to is, that the older the fruit spurs, the smaller will be the fruit, and I believe this to be true as the result of my observations, and this explains the fact that the fruit on old trees is small. The pruner's problem that I started out with and that I have had in mind is this, how can we make old trees bear as fine fruit as

young trees? Until we can do that, we have not mastered the subject. The demand at the present time is for large, fine fruit. Large, fine fruit sells for a fine price; small, inferior fruit brings a price that rarely pays expenses, so it is the orchardist's problem to grow large fruit and plenty of it. Now, the question is, how much can we do, or can we do anything by pruning to correct this trouble? The more I study this subject of pruning, the more I believe that it is a fine art. The principles that we have followed are all right as far as they go, but they have not discriminated between varieties, or between the trees growing on different soils; in other words, they have not considered the individual tree, and the only true method of pruning is one that takes account of the individual tree and applies the pruning to that tree. We probably ought not to prune a Duchess apple the same way exactly that we prune a Wealthy. We shall learn how to prune the tree when we see the tree, and only when we see the tree, just as with the grape vine. In pruning the grape vine we cannot lay down a cast iron rule, because grape vines are different and they must be differently pruned.

Now, the question is, how much can we do and how can we do it to regulate the size of the fruit? I think that the principle that we need to observe is this, that large fruits will grow on young fruit spurs and they will not grow elsewhere. If we have young fruit spurs, we will have large fruit, provided, of course, that we have a vigorous growth, and generally speaking, the younger the fruit spur the finer will be the fruit. If this is true, then we must so prune our trees as to have young fruit spurs rather than old ones. You all know that a Duchess tree that is twenty years old is just one mass of fruit spurs, and sometimes these will branch like a deer's horn. If we could in some way prune our trees that we could have young fruit spurs instead of old ones, we could grow fruit just as well on a Duchess twenty years old as one of six or seven I believe. Then the next question is, how shall we do it?

I do not claim to have answered this question fully, but I think that one secret is this: we must,—with the oldest fruit spurs, that is, one step in doing, that is,—we must thin our

fruit; then we must prune our trees in such a way that we shall grow some strong new shoots. In other words, we must adopt something like a renewal system, such as we use in the grape. I am sure this is a new doctrine, but I hope that I shall be able to promulgate some new doctrines. I have been investigating now for nearly twenty years and I ought by this time to be able to suggest some new doctrines. I think that we can gain a great deal by pruning our trees rather strongly, so as to start a new growth. I know there is danger of starting too much new growth, but I believe that we should aim to grow up two or three strong sprouts every year with the view that they will come in pretty soon and take the place of some old and feeble branch that has done its work and that is no longer able to nourish its fruit so that the fruit will grow large.

I want to relate an instance in connection with this that occurred when I was a boy. I did not understand it then as I do now, though I remember the fact. My father had a Golden Russet tree in his orchard, it was an old tree and it bore very profusely, but the apples were very small. By an accident the limbs on that tree were broken down on one side, so that we had left only three or four branches that did not extend vertically, but extended more or less at an angle on the other side, leaving the side on which the limbs broke without any branches. This tree started up some very vigorous sap sprouts, we would call them, on the side where the breaking occurred, and these grew four or five feet the first season and they were nearly an inch through at the base; they were very vigorous and strong shoots. Next spring I expected these new shoots were going to bear fruit, and when I found they did not blossom, I was disappointed. Next year they did not bear fruit, they kept right on growing, and I wondered when they were going to bear, but the third year those new sprouts bore such russets as I never saw before, they were double the size of those that grew on the old limbs. We have been taught that we ought to cut off sap sprouts, and yet I expect the sap sprouts are nature's efforts to renew the bearing wood of the tree, and if we allow the sap sprouts to grow in some cases and remove some of the old feeble limbs, we could have new apple trees, so far as the ability to pro-

duce new fruit is concerned. I am aware that this is rather a new doctrine, but I believe there is some common sense behind it. I do not claim, as I said, to have settled this problem, and there is another problem suggested by this twig that I confess that I need help on. What shall we do with a twig that grows like that and does not make a fruit spur? Is there any way that we can prune that to make it bear fruit spurs? This is one of the things I am studying on. You will notice here that the buds have started, but the growth seems to have continued, they have all grown long and slender and weakly, but there is no sign of fruit bud. It is a seedling, but we have trees in our orchard of named varieties that grow like this.

THE SPRAYING OF PLANTS.

By F. M. Webster, Wooster, Ohio.

Less than forty years ago, the spraying of plants with insecticides or fungicides was unknown, and, if even thought of, were not seriously contemplated as being a part of good husbandry. A spraying machine in those days would have excited almost as much curiosity as would a telephone, or a modern typewriter. There was, indeed, less need for such a machine, west of the Alleghany Mountains, at least. The need of insecticides and fungicides, and the machinery necessary for their application, has come to us with the advance of civilization, and followed the destruction of the forests, the prairie flora, the wild animals and the dusky aborigine. They are the outcome, either direct or indirect, of our more intense civilization, and must not only be adopted by the successful fruit grower or farmer, as a part of his business, but he must improve upon them, precisely as he improves upon the varieties of his fruits and the breeds of his domestic animals, and for the same reasons. He must produce, continually, more perfect fruit, more desirable vegetables, more

tender and juicy beef, and better horses, else he cannot dispose of them profitably to his fellow man, who needs them and is able to pay for whatever he needs.

WHY SPRAYING BECAME NECESSARY.

There are three prime reasons which have made spraying not only necessary, but in many cases absolutely imperative, if success is to be secured. These are (1), the destruction of the food plants of many of our now destructive native insects, and the replacing of these, in large areas plants of quite similar nature, (2), the weakening of our trees, plants and vines by hybridization, cultivation, grafting and budding, and, (3), by the importation of varieties quite similar to those indigeneous to our country, but more susceptible to attack from our native insect pests and plant diseases.

The clearing up of the native forests where native fruits were produced, and the destruction by similar methods of many of the food plants of leaf eating insects, has driven these to the cultivated vegetation, because these insects had no where else to go, and it was a case of either adapting themselves to a slight change of food, or perish.

The plum curculio no longer confines itself to the wild plum, though it does return, if possible, to the woodlands there to pass the winter among the fallen leaves; but the plum orchard of the horticulturist offers a better feeding ground, with larger and more attractive varieties than the wild plums of the woodlands. The insect is enabled to breed more unrestrained, and a greater supply of food is offered it, than was possible under the old existing conditions. The inroads of birds upon its numbers in the primeval woods are now greatly reduced, and the few trees that happen to be located in an occasional chicken park, are the only ones where there is much of the old time trouble from feathered enemies. If there are not plums enough, it can get along with the early peach and some of the apples, in which to breed and feed.

The Canker worm, the Tent caterpillar, leafrollers and other native leafeating insects, find instead of on occasional wild cherry tree, wild crabapple tree or wild plum tree, whole

acres of improved varieties of these; acres upon acres of raspberry and blackberry, strawberry and grape. Grass feeding insects find hundreds and thousands of acres of grassy plants, more tender and juicy than the natural grasses. Is it any wonder that native insects, before confined to a less number of less fruitful trees, with an occasional year that permitted almost no fruit at all to grow, thus almost exterminating them, should, under such favorable conditions as are offered by our present system of fruit, vegetable and grain culture, thrive and increase in numbers far beyond what they would under less artificial and less favorable surroundings? We first create an environment, unnatural and vastly more favorable than the original for the development of insect enemies of our crops, and bring about the very conditions that these insects are intended to prevent and then wonder why it is that they do what is the most natural things in the world for them to do, viz., feed and breed in the midst of plenty. It has always seemed to me that the fruitgrower who planted out his orchards, vineyards and berry fields, and gave them no protection from the natural enemies, was doing about what a commanding general would do if he were to send a division of his army into the enemy's country and not support it by other troops. It is as plain as can possibly be that the fruitgrower must use artificial measures to fight the enemies of his crops, if he expects to succeed. The present conditions are what they are, and we cannot now change them. This being true, it is manifestly the proper course to pursue, in seeking by artificial means to counteract, so far as possible, the adverse effects of these present conditions, and, thus the spraying of plants with insecticides and fungicides becomes imperative.

THE WEAKENING OF TREES AND PLANTS BY HYBRIDIZING, GRAFTING, ETC.

While we have been increasing the areas of many plants far beyond what was contemplated by nature, and thus inviting attacks from the natural enemies of these plants, we have also been meddling with nature's laws in another direction.

There is not an intelligent stock breeder who does not know that, in breeding from the hardy but healthy scrub up to the

present day standard of excellence, as he gets away from the scrub and the mongrel, he weakens the constitution of his animals, rendering them more susceptible to disease and less capable of withstanding climatic and other changes. The scrub cow is but little subject to tuberculosis, while the havoc that this disease is making in the herds of the best blooded and most carefully bred and pampered is simply astounding. Some of us who were born and reared in this country of ours, at a time when furnaces, hot and cold water pipes, chest protectors and many other attachments to our present day domestic mechanism were offset by houses that kept the rain and wind off but gave ample ventilation, and the nearest doctor ten to twenty miles away, know perfectly well that we grew up rugged and healthy, with seldom need of a doctor; and then, the size of the families! The beef we got was reared like ourselves, to face the storm, and was, like ourselves, fed on rough but healthy food, with plenty of air and sunshine for dessert. What is true of ourselves and our domestic animals is true of our fruits and vegetables and grains. We have perfected varieties and breeds up to their present standard, but at the expense of their vitality and power to resist disease and the attacks of enemies. We have deprived our fruit trees, shrubs, vines and plants of their resistibility to these things; have made them more pleasing to the taste of their insect foes as well as to that of the city man and his family.

Again, we have searched the world over for fruits, plants and flowers to tickle the palate and please the eye of the most fastidious, and with these we have got what we did not want, viz., the insect foes of these plants that devoured them in their native countries. Worse than that, we not only brought the native enemies of these plants with them, but almost invariably left the enemies of the insects behind, with the result that not only have such insects spread to the native plants and overrun them, but because of their having no natural enemies here, they become the worst of all our insect foes. It looks sometimes as though if we set out to put ourselves in the hands of our enemies, we could hardly have improved upon our present course of procedure. Years ago, it became apparent that some

thing must be done to protect us from these enemies of our crops, especially the fruits and vegetables, and we set about to find remedial and preventive measures and methods of applying them, with pretty much everything to learn.

THE BEGINNING OF SPRAYING.

One may explore our literature up to 1870 in fruitless search of even the mention of spraying or spraying machinery, and the nearest that he will come thereto will be an occasional mention of the dusting of plants with paris green or arsenic mixed with flour, lime or ashes. The oldest patent on record for a machine to apply liquid poisons on a large scale, was the Johnson Spray Machine, patented December 16, 1873, by Judge Jehu W. Johnson, of Columbus, Texas. This was simply a tank mounted on a cart, with a double-acting force pump attached to the top of the tank. It was about this time that Mr. Gross, of Ripon, Wisconsin, invented an instrument for spraying potato vines with a mixture of paris green and water to destroy the potato beetle. It was not until five years later that much was accomplished, and not till 1880 that the matter of spraying with arsenical poisons began to attract general attention, and even then largely as against the cotton worm and Colorado potato beetle, and not as against orchard pests, except, perhaps, the canker worm. In 1875, Mr. J. N. Dixon, of Oskaloosa, Iowa, in spraying his orchard to destroy canker worms, found in the fall that where he had applied a solution of arsenic there was no injury from codlin moth, and we had the first intimation of what could be accomplished in poisoning the larvæ of that insect. The matter was not generally brought to public attention, however, until 1882, in a prize essay presented at the meeting of the Iowa State Horticultural Society for that year. It was about this time that agricultural experiment stations were established, and this gave opportunity for investigation and experimentation, which in turn directed the attention of manufacturers of pumps to this new demand for particular machinery. Then followed the improvement of spraying machinery and nozzles, and here the French have helped us out greatly with their Bordeaux mixture and Vermorel nozzle. Bordeaux mixture is still the

standard fungicide, and in our extensive spraying in Ohio, during the last two years, we have used the vermorel nozzle almost exclusively.

WHAT TO SPRAY FOR AND WHAT TO SPRAY WITH.

For twenty years I have been telling people, in the papers, in bulletins, in letters, at institutes and other kindred gatherings, that it is useless to spray with poisons to kill insects that do not devour the foliage but only suck the juices therefrom; that Bordeaux mixture is not an insecticide at all; that for sucking insects we must spray with some insecticide that kills by contact; yet not a year goes round that I do not learn that Bordeaux mixture will not have any effect on aphides, potato beetles or San José scale; that paris green will not kill chinch bugs, squash bugs or scale insects, because "we" have tried it. Other entomologists and horticulturists have been doing the same thing in the way of trying to instruct people, but still we are encountering these criticisms every year; and when we remonstrate, we are asked why in the world we do not tell people these things. Why do we not tell people? If the Angel Gabriel had attempted to "tell people" he would have long ago worn out his trumpet and retired in disgust! Why do we not tell people? Why will not people read, and listen, and remember these things that are as simple as the first letters of the alphabet? Tell people! Why, we are so sick of telling these things that we hate the sound of our own voices, or the words as they appear on paper. How in the world are we to tell you if you will not listen, or listening will not remember? Why will you not read these things? I ask these questions because this is really one of the most difficult phases of the problem. After we learn what an insect will do and what it will not do, there is the unknown quantity to take into consideration, viz., what the people will do if they do anything. Now, I have no wish to discount the intelligence of our people, and yet it always gives me the feeling that I am doing this when I repeat, time and again, the simplest statements and directions relative to spraying for certain insects or fungus diseases. Professor Goff has, I know, told you again and again that for fungus diseases, like apple scab, the

anthracnose of the grape, raspberry and blackberry, tomato, melon and cucumber, you must not use poisons, but Bordeaux mixture; that this is not a poison, or indeed, an insecticide of any sort, and it is little if any use to apply it against insects. It does not seem necessary for me to come all the way from Ohio to tell you this. You can combine this Bordeaux mixture with poisons and thus destroy both insect and fungus at the same time.

Take the apple worm, the caterpillar of the codlin moth as an illustration. You can apply Bordeaux mixture to the very best advantage for apple scab, just as the buds are swelling in spring, but as you do not need to fight leaf-eating insects at this time, poisons are unnecessary for this spraying. So, use Bordeaux alone. Just as bloom falls, spray again, and this time, put in your paris green, four or even six ounces to fifty gallons of the Bordeaux, and this application will affect both scab and insect. In a couple of weeks, spray again with the same combination. In Ohio, we have had more trouble with the second brood of codlin moth than with the first, because, by the time these appear and lay their eggs, the poison has mostly washed off the apples and we cannot spray so as to reach the calyx and poison the caterpillars. But I feel greatly encouraged, just now, and believe that we have not only solved the problem of the second brood, but also found out how to protect the apples from the worms hatching from eggs laid by the moths that come in from without—from untreated orchards. Paris green will probably do for the first spraying and also for the second, but, this year, we think we have found something better for the last application of poison. I have long thought that, if we could get a poison that would adhere to the calyx and not wash out readily, we might be able to strike the last brood of codlin moth larvae. As it now appears, we have this desirable insecticide in Bowker's Disparine, or, what is practically the same, Swift's Arsenate of Lead. These two preparations have the desirable qualities of adhering tenaciously and not injuring the foliage. If we watch closely and just as the apples begin to reverse their position, that is, the calyx end begins to turn downward, and then spray promptly and thoroughly with a mixture of three pounds of either of these

preparations, we can get enough into the calyx, and once dry it will remain there, so as to protect the apple from attack. This is also a remedy for all other leaf-eating insects. The cost of these mixtures will be from 17 to 20 cents per pound, but if they do the work, as now seems probable, the cost will be a matter of minor importance; besides, they are easily mixed and will not burn the foliage like paris green. I would certainly urge you to experiment with these in the way that I have indicated.

Please remember that the plum curculio is above ground as early as August of the same year that the eggs are deposited in the plums, or early peaches; they feed by puncturing fruit, but deposit no eggs, and in the fall seek woodlands if such are near at hand, and if not, matted grass, in which to pass the winter. They appear with the coming of spring, feeding on the buds and unfolding leaves, but not depositing their eggs until the plums get to be about the size of peas. Now, there is but a single brood each year; you can only fight the beetle itself, as the young hatches in the flesh of the fruit, and only leaves it to enter the ground. Mr. Willard, of Geneva, New York, tells me that his plum orchard always suffers worst, and the curculio always appears first, in that portion nearest adjoining woodlands, and if no woods are near, along roadways where there is much matted grass. Much can be accomplished in fighting this pest by burning fallen leaves and matted grass in winter or early spring. As soon as the buds begin to swell, spray with Bordeaux mixture for plum rot, and put in four or five ounces of paris green to each fifty gallons, for plum curculio. Soon after the bloom falls and the young fruit starts, spray again with the same mixture; this time for the plum curculio, plum rot and shot hole fungus, as you can now hit all three with the same application. In a week or ten days, spray again with the same mixture, and then for the last application you can omit the paris green, as you then spray for the plum rot.

The different species of aphides, green and brown lice that are often so numerous on apple, plum and cherry trees, are only to be killed by contact with some insecticide that kills in that manner. The plant bugs and squash bug are of this kind.

For these, kerosene emulsion, or a whale oil soap suds will be found most effective, applied as soon as the insects are observed. The squash bug does not yield to even these measures readily except while very young, and the pest should be fought at that time.

With horticulturists in most of the states, scale insects are attracting the greatest attention, and especially is this true of San José scale. I do not know to what extent it interests you, but with us, it is the all-absorbing question as to the best methods of treatment. At present we are relying on spraying with whale oil soap or crude petroleum, with neither entirely satisfactory.

Whale oil soap, applied during winter or early spring, two pounds dissolved in each gallon of water, is as effective as anything that we have found, if carefully and thoroughly applied. This soap is a fertilizer, cleans up the trees and prevents leaf curl of the peach. It is not injurious to the most tender trees and shrubs, except to living fruit buds of the peach, and not to these if applied as they are opening in spring. The only objection to its use is that it is expensive, and offers no protection from immediate reinfestation by the scale. The cost is five or six times that of crude petroleum in treating orchard trees.

Crude petroleum is effective and will kill every scale that it touches, and protect from reinfestation for a greater or less period. It is comparatively inexpensive, and, with us, usually easily obtainable. It is not a fertilizer and will not prevent peach leaf curl or other fungus diseases so far as known. It is dangerous, and should never be used without careful experimentation in any and every locality. In fact, it requires two or three years' experimenting in order to find just what can be done and what cannot be done with it in the orchard. To the peach and other tender trees and shrubs it is particularly dangerous, and especially to old and weakened trees. In prescribing treatment for San José scale, under the present laws of Ohio, I prescribe the whale oil soap, but explain the dangerous nature of crude petroleum and allow it to be used at the risk of those making the application. In treatment done under my direction, I use the soap, for the reason that I am

often obliged to employ inexperienced men, in localities where the crude petroleum has never been tested, and on all kinds of vegetation, hence, must use some mixture that will not injure the trees, etc., to which it is applied. If I had an apple orchard of my own, and wished to treat it for San José scale, I should use a mechanical mixture of crude petroleum, in early spring, and apply it carefully. If I had a peach, plum or cherry orchard to treat for this pest, I should use whale oil soap in spring, just as the buds were opening. I should also use a dilute soap mixture or dilute kerosene emulsion, in late summer or early fall, to kill the young scale and relieve the trees of as much drain on their vitality before going into winter, as possible. I will say, however, that if I had an orchard infested by San José scale, and it was the only one in the neighborhood, and I could get rid of this pest by destroying half of my trees, I would save time, money, and worry by burning them as quickly as possible; if the neighborhood was infested with the pest, I might take a different course.

Now, before leaving this subject of what to spray for and what to spray with, let me advise you, once and for all: first find out just what you want to do. If you want to overcome fungus diseases, use fungicides, and do not expect to kill insects with them either. If you want to kill insects, or do this and prevent fungus diseases at the same time, find out what kind of a mouth the insects have, whether biting or sucking. If they have biting mouths, combine poisons with your Bordeaux mixture or other fungicide, and apply by one and the same treatment. If the insects have sucking mouths, you must treat separately the insects and diseases, using for the insects something that kills by contact. If you will only learn these things before you begin—find out what you want to do—you will save time, money and disappointment. If you go into spraying blindly, and expect to derive any profit therefrom, you might as well stop before you invest your money. You will come out of your experience about as well off as you will to start out loaning your money to whoever wants to borrow, without security.

WHEN AND HOW TO SPRAY.

Of one hundred points in success, ninety of them will be contained within this division of my subject. That is to say, if our insecticides and fungicides were without fault and our spraying machines were perfect, neither of which is true, with the spraying that is ordinarily done the results would be only partly satisfactory. Spraying done at the proper time, in a proper manner and with the right materials should pay a return of from \$5.00 to \$10.00 for every \$1.00 invested. If it is done blindly, at most any convenient time, and a happy-go-lucky manner, you may expect from 5 cents to 50 cents return for each \$1.00 invested. You must remember that you are doing business with nature and under laws that are as exact and unvarying as any others that govern the universe, and these do not wait on the pleasure of anybody or anything. An insect may be easily reached and overcome today, and tomorrow or the next day be beyond our reach, and no way left us to prevent its destructive influences. Do these things when you are ready? Why, you might just as well talk about living as long as you please and dying when you get ready!

When the petals fall from the apple, the codlin moth is on hand to lay her eggs; the calyx is then wide open, and the young caterpillars will seek the calyx for their first meal; later this calyx will close up tightly and if poison can be introduced before this closing it will be better retained. The whole object of a lifetime with these moths is to deposit their eggs, and they will do this, largely at least, as soon as the bloom falls. Then is the time spray, and not after the other work is over and the eggs laid and hatched and the young worms making their way into the young apples, and the calyx of those not affected so closed over as to prevent the free admission of the spray. The young canker worms are minute and very hungry, easily killed by poisons about this time, but let them alone until they are one-half to two-thirds grown, and they seem to thrive on poisons. The potatoes are just coming out of the ground; there are a few beetles only and but little plant to treat. Get an old fruit can, punch fine holes in one end and fix a broom-handle to the other so as to hold the can verti-

cally over the young plants, and, tapping it lightly with a light stick, sift a mixture of one pound of paris green and ten pounds of a low grade of flour directly on to the surface, where it is needed and where it will adhere to the leaves. This is not spraying, but it will kill off the old beetles that first appear, or at least many of them, before they lay their eggs. Later, when the plants get larger, they may be sprayed with paris green, or with disparine or arsenate of lead. It is the usual custom to let the few beetles that appear in the spring entirely alone, until the young develop and go into the ground to transform. As these continue and as they begin to transform and appear above ground, we hear the complaint that spraying is of no avail, as, though all are killed off one day, there are as many more the next. This is of course true, and will continue through the season, because you have let the first ones get away into the ground, when poison applied at the right time would have prevented this. The time to begin is when the beetles begin, and spray as soon as there is a good growth of tops.

Spraying is not something that can wait on everything else, or, in fact, anything else. When the time comes, it must be done promptly or good results cannot be secured with the most effective insecticides. It seems, sometimes, as though there was a human aversion to spraying or, indeed, fighting insects at all, at the proper time, and that it took a lot of stamina to pull one's self together and put forth the effort at the right time and in the right manner. I do not know whether this is due to the fact that they are frequently so minute, or whether it is because we have insects always with us, and familiarity breeds contempt. Certain it is that the contempt and neglect are common everywhere among our people, and I do not know that they are worse in one state than in another.

We have somehow got the idea that anybody can spray, and we send the hired men out to do this work and flatter ourselves that we have done all that can be done. We have sprayed! It is simply amazing to see the inefficient spraying that is done every year, not always by the hired men, but often by those who have not only the best of intentions but are thoroughly honest and earnest, and I may add, fully believe that they

have done the best that can be done. Now, do not do your spraying yourself, and do not send inexperienced men to do it, but go yourself and take your men with you. Do not take two men to hold the nozzles, and you do the pumping, or you hold a nozzle and let one of them pump. Have a man to drive and pump, and a man for each line of hose, and you yourself get right down among the men at the nozzles. Watch every movement, and see that not a limb or twig fails to be reached by the spray. No man can do this as you can, and you cannot if you are to handle a line of hose. You must see and direct the work, which is all that one ought to do, and if done right this will prove the most important and profitable part. You can save material by looking to it that the spray is evenly and thoroughly distributed, and not a part of the tree drenched and the other part untouched. Trees should never drip, or the mixture run down the trunk and collect in puddles about the base. The result will depend less on the amount of material used than on the thorough and equal distribution of it. If you are spraying for San José scale, a few square inches of surface left untouched will prove veritable nurseries before the season is over. I had hoped that with the whale oil soap, the rains would wash it into the crevices and out-of-the-way places that it failed to reach direct, but in this I was disappointed. I was also in hopes that crude petroleum would spread, and thus reach, effectually, small portions of the surface not reached direct, but here again, we find that unless the surface is actually hit by the spray, the scale are not only not killed, but keep right on breeding and sending swarms of young to the new growth, thus showing more clearly than ever that the entire surface must be lightly but completely covered in order that the treatment shall be effective. It is simply the same old story, and proves over again what I have stated, and I would no more trust an inexperienced man behind a nozzle, and expect to get satisfactory results, than I would put him at the throttle of a modern railway locomotive and expect him to run it without accident. There are some careful and successful horticulturists who spray properly and at the proper time, but they are few and far

between, and I believe that there are more that fail in this particular than in any other connected with their business.

Spraying is an art of itself. It is a profession as yet undeveloped, and until we give it more attention and improve upon and develop its practical value we shall never get the full and effectual benefit from it that is possible with our material and machinery. I believe the time will come when spraying will constitute a distinct and separate department of horticulture, and students will in our agricultural colleges be trained in not only the art of spraying, but the sciences that are most necessary in connection with it, viz., entomology, botany and chemistry.

SPRAYING MACHINERY.

I shall, perhaps, disappoint you by stating that the spraying machine that is wanted has not yet yet been invented. We have several good ones, it is true, but I fully believe that if I were to buy any of them I would be likely to tear it to pieces and rebuild it anew. When we began the work of treating premises for San José scale, in Ohio, we found several problems confronting us, not the least of them being the matter of outfits for the spraying forces. I brought the first steam spraying machine into Ohio, and was at first almost sorry I had not left it at the factory. But the young man in charge of treatment tinkered with it, changing here and there, until we finally got it to be about what was wanted for our work. We could work four lines of hose and it gave us a pressure of 100 pounds to the square inch, so that the highest trees were reached without difficulty. In city work, we could stand it at the curb and run the hose back two or three hundred feet and treat everything that it became necessary to treat. Or, as in some instances became necessary, we could detach all of the lines of hose but one, and run this out four or five hundred feet, put on a T and attach two lines of hose to the one and work over a considerable territory, in the most inaccessible places, without taking anything but the men and hose on the grounds. For treating large and small trees, in city and country, a steam spraying machine is about what is wanted; but for ordinary orchard

work, I question whether it would pay to purchase one of them. One drawback in orchard work is that the men on one side cannot progress faster than those on the other. If the trees are all of about equal size and none missing, the two pair of men will work about equally rapidly, but otherwise, either one side or the other will frequently lose time in waiting for the other to catch up, though sometimes they can help each other out. This machine weighs about 2,500 pounds with the tank filled, and is thus rather cumbersome in times when the ground is muddy. Taking it all in all, I do not believe that a steam spraying machine will be profitable in orchard work, until they have become more perfected. A good spray pump, mounted on a 300-gallon tank, with a platform that can be raised and lowered, so as to enable the men to reach high trees, will probably, at present at least, be found as practical as anything. We found that a barrel pump mounted on two wheels after the manner of a swill cart, was exceedingly handy in out-of-the-way places and where the trees were not large. The same pump that is used here can be transferred to the large tanks.

For applying mechanical mixtures of petroleum, either crude or refined, special pumps are constructed, and the best one now on the market is called the "Sparamotor," manufactured by the Sparamotor Company, of London, Canada, and Buffalo, New York. This pump works easy and gives more accurate percentages than any other known to me.

Our spray pumps are being rapidly improved, and it is impossible to recommend any single machine. There is this to be considered, in the purchase of spray pumps: if one likes a tool, he will do better work with it than he would with even a better one that he does not like. Hence, the advice to make your own selection is probably the best that can be given. But, by all means get a spray pump of some sort, and use it at the proper time and in the proper manner, and with the proper materials, and I can assure you that it will pay you better than any other piece of property that you can possess.

WEDNESDAY AFTERNOON SESSION.

The President: We will take up the discussion now on Prof. Webster's paper. I have been very much pleased to see the number of younger men that are here. I want to say to them that we old fellows get certain notions which it is very hard for us to get rid of, and you should be careful not to get notions except they are just the right notion, and I think that with the progress that is being made all along the line, that you must not get too deeply rooted in any notions that you do imbibe.

Mr. Edwards: I would like to ask the professor what he would recommend to the farmer for his smaller orchards, that is, what one or two sprayers would be most serviceable for him to use?

Prof. Webster: I do not know whether that pump standing at the left over there is one of the Morley pumps; I judge it is from the appearance of it; a pump like that or perhaps a smaller size than that mounted in a barrel and that mounted on wheels just as you would a swill cart, is just about the most convenient thing that you can get, that is, for small premises. You can go almost anywhere with it and it is light, and we have used it a great deal even though we have been working twenty-five or thirty men, I have oftentimes found that we could use that to very good advantage.

Mr. Edwards: Is that the air pressure,—do you like that style?

Prof. Webster: Yes; I do not mean those compressed air machines, because somehow or other with me those have worked out better on paper than anywhere else. Perhaps I am a little bungling, but I never could get those compressed air machines to work just right, and I thought I would better let the manufacturers work with them a little longer before I try them.

Mr. Marshall: Prof. Webster mentioned a tank on wheels, three-hundred-gallon tanks; I would like to ask him how he

agitates the Bordeaux mixture, for instance, in that tank, when he is spraying it?

Prof. Webster: We have an attachment worked by the handle that simply goes down through the upper part of the top of the tank and works in this way. Now, I ought to have said that we never use a square tank; we always use a tank with a round bottom, because every little jolt or inequality helps to stir that mixture.

Mr. G. J. Kellogg: Prof. Webster spoke of the curculio feeding on the bark of trees before the foliage had started in the spring. Cannot we catch them with the poison then? I thought we could for two years.

Prof. Webster: You can poison a good many of them, but when you come to ask me for a thoroughly preventive remedy, I cannot give it, because you will not poison all of them; and I am going to try this disparine this coming spring, because they will adhere to the bark of the tree if they cannot get anything else; they will gnaw the bark and take the opening leaves, they have got to feed on something. I do not know how it will turn out, it is simply an experiment. I know it will not injure the foliage, it is perfectly harmless; if you use double the amount, you cannot hurt anything.

The President: How early do they come out?

Prof. Webster: Oh, they come out just as soon as the warm days of spring begin; they are simply hiding away now in the fallen leaves and matted grass, all ready, as soon as the weather warms up, to come out.

Mr. Kellogg: What is the best way to catch them?

Prof. Webster: If you want to catch them, you better make a large wooden frame, cover it with cloth and arrange that with a slit so that you can run it up both sides of the tree and jar them on that and destroy them. A great many who spray also use that method.

Mr. Patton: Prof. Webster, as to destroying the second brood of codlin moth, would you use bands on the trees? Is that an effective way of destroying them?

Prof. Webster: No, it is not, and I will tell you why: With the codlin moth, the man who sprays faithfully has probably destroyed the most of the moths that would develop

in his own orchard. It is the fellow that does not spray that is responsible for the mischief. An orchard just over the fence will raise enough of that second brood to sweep over and destroy your apples, and there is no way you can prevent that by banding, because in banding you simply catch the worms that have come out the apples earlier.

Mr. L. G. Kellogg: Is it the habit of the plum curculio to fly into the tree, or climb into the body?

Prof. Webster: Perhaps that may be a matter of circumstance. They can fly and they can crawl, ordinarily they will fly; but I can understand the condition where if they were about the base of the tree and the weather was a little cool, they would crawl up the tree instead of flying up. But under ordinary conditions I think they are a great deal more liable to fly than they are to crawl up the trees.

Mr. M. S. Kellogg: I would like to ask Prof. Webster in regard to the San José scale: does it detach itself readily from trees that are infested, and does it live on the ground for any length of time, and what are the habits of that scale?

Prof. Webster: For the first forty-eight hours after they are born,—they are not hatched as insects ordinarily are,—they are running about freely over the trees, and they are minute particles that look like moving particles of dust, yellow dust. After that time they settle down upon the bark and this scale-like covering forms thereof, and they do not move or detach themselves afterwards, but within that forty-eight hours the wind will blow them from one tree to another, ants will carry them from one tree to another, and birds will carry them from one orchard to another; or if they are nesting in an osage-orange hedge, they will carry them from the trees where they feed to the hedge, and they will spread just as readily on an osage-orange hedge as they will in an orchard, and the most dangerous thing you can have in a neighborhood that is infested with a scale is an osage-orange hedge. I believe that answers the question.

Mr. Kellogg: Another question along the same line: What difference is there between the San José scale and the so-called Forbes scale?

Prof. Webster: I do not know that I can make that clear.

The one that is called the Forbes scale does not breed nearly as rapidly as the San José scale, its effect on the trees is not so bad,—I never knew the Forbes scale to kill a tree; and it is more easily destroyed, that is, the covering is not so thick and impenetrable.

Mr. Patton: I would like to ask if any one has had experience in pasturing sheep in the orchard to take up the fallen fruit? I have tried running hogs in my orchard for that purpose, and I must confess that with me it has not been a success, and I thought perhaps someone might enlighten us as to whether sheep would be better than hogs.

Prof. Webster: We tried sheep in the Station orchard for that purpose, and the result was precisely the same as Mr. Patton's. But there again, the trouble with us is not with the fruit that has fallen; we have got orchards all about the neighborhood that are not sprayed, and it seems to be perfectly clear that the moths come in, not from the fallen apples, but come in from the orchards that are not sprayed.

Mr. M. S. Kellogg: How powerful a glass is necessary for the ordinary nurseryman to have to detect the San José scale or other injurious scales, and where can they be secured?

Prof. Webster: I do not care how good a glass you have got, you want about a year's experience or you would not see it. It is the most difficult thing to detect until it gets very abundant, and that is one of the worst features.

Mr. Moyle: How far north will this scale live and multiply?

Prof. Webster: Tell me how far north they will raise fruit trees, and I will answer the question. I believe it will live at the North Pole if you grow fruit there. It lives very well in Canada and I think in Manitoba, and it is very doubtful if there is a place where the climate will admit of fruit growing where it will not live.

The President: We will now take up the discussion on Pruning, as Prof. Goff is with us.

Mr. Edwards: I would like to ask Prof. Goff—of course we have different classes of trees, but in order to carry out his theory, or experience, which ever you may call it, what proportion of the old fruiting wood do you take out annually to bring

out those finer specimens of fruit? Could you make that clear?

Prof. Goff: I do not know that I can make it clear, but my idea is that we should do it gradually, and that we should aim to have growing up all of the time a certain number of shoots with the idea that they would come into bearing the next year, or the second year, and that we should have some shoots coming into bearing continually. In other words, we should practice a continuous renewal system.

Mr. Edwards: Would that be one-third, or one-eighth, or is there any guide?

Prof. Goff: I could not put it into figures. It would depend largely on the variety and on the soil and on the age of the trees.

Mr. Patton: I have had some experience with cutting off evergreens from the top, for instance, Balsam Fir and Norway Spruce, when they have attained considerable age, say twenty-five or more feet high, and when the lower branches began to fade, and I found by cutting back from the top, those trees seemed to renew themselves, they obtained increased vigor in the lower branches and throughout the whole tree.

GROWING PEARS IN WISCONSIN.

By W. J. Moyle.

(Read at the Winter Meeting of the Wisconsin Horticultural Society.)

On the west shores of Lake Michigan, extending the entire length of the state, is a belt of land reaching from ten to twenty miles inland, where the pear seems to thrive equally well with the apple. The high, rolling lands of eastern Racine county can be classed among them. In traveling up and down this territory one will come across many small orchards and individual trees, that have paid the planter well for the ground they have occupied.

Surprising as it may seem, nevertheless it is true, that with

fifteen years' experience in growing the pear I have found it as hardy in the tree and fruit buds as our best apples, for during the severe winters that we have recently passed through, when fruit trees of all descriptions were killed, my pear trees pulled through and gave me a fair crop of fruit every season,—a very valuable feature with the pear, as after the trees once begin to bear you can always expect some fruit every season; at least this has been my experience. This was well illustrated the past season, which was an off year with the apples and crabs, and we should have had a complete failure of tree fruits had not the pear orchard come to our rescue with a well distributed crop of all varieties, giving us choice fruit from early August to late November.

In looking over the orchard the other day, I noted that most of the varieties are well studded with fruit buds for next season. These trees will blossom and mature their fruit next summer, barring a late frost at blossoming time, which once in a great while happens, thus destroying the bloom.

Another very marked and desirable quality of the fruit, the pear, is its remarkable freedom from insect pests, as apple and plum trees in the same orchard were literally riddled with codling moth, curculio and gouger, while the pears were practically unmolested.

The one great drawback to growing pears, not only in Wisconsin but all over the country, is blight. No remedy has as yet been found, although it has been pronounced a bacterial disease. We hope that in the near future some antidote will be discovered. In the meantime select a favorable location on which to plant the trees. High rolling land, in exposed situations, should always be chosen, as a free circulation of air and a good drainage are absolutely essential.

Of the twenty or more varieties now fruiting in our orchard, I consider the Kieffer the most robust and hardy; Osband's Summer, Lawson, Wilder Early, Clapp's Favorite, Marguerite, Bartlett, Souviner de Congress, Flemish Beauty, Seckel, Sheldon, Clairgean, Anjou and Kieffer have proved the best in their respective seasons; the most profitable, Souviner de Congress and Kieffer; the highest in quality, Marguerite.

I have picked up several seedlings throughout the county

that have some very deserving merits, many of them being much superior to any of the Russians, of which I have fruited nine varieties the past two seasons. These were all coarse grained and of the poorest quality. In fact, I have condemned many of my Kieffer seedlings to the brush heap that were much superior in size and quality to the Russians.

The most interesting and instructive work that I have carried on in my pear growing, are the results I have obtained from a lot of seedlings of the Kieffer, of my own planting, for the past three years. I find many of them have better qualities than the parent and all are of good size, very productive, and inherit the vigor and vitality of the Kieffer.

In conclusion, I would say from past experience, the pear can, in favorable localities, be grown in Wisconsin with considerable profit.

Yorkville, Racine Co., Wis.

Mr. Converse: I would like to ask what the season is for these seedlings.

Mr. Moyle: The number 1 is distinctively a winter pear, it is not fit to pick until the last of October and first of November, and it will keep all winter to way along in March. It is a beautiful pear, has a beautiful color, is a good keeper and I think is desirable.

Mr. Converse: What would you recommend for general planting, say, if you were selecting two varieties, which would you recommend of the lot?

Mr. Moyle: Well, the first two, No. 1 and No. 2, I selected them, as I think they are the best.

Mr. Kellogg: He means of the standard variety.

Mr. Moyle: Well, with me, if I were picking out for home use, for my own market, I would recommend a variety such as the Bartlett, that will do well with me. The Bartlett you know is a tender pear, one of the most tender, but has done remarkably well with us. I would recommend the Flemish Beauty for a hardy location. I have the Idaho pear in fruit now, it is very fine in quality, but its appearance is against it, it is a green

pear and it is very liable to show hard spots that make it irregular in form.

Prof. Goff: About how far are you from the lake and how high above the lake, and is there any higher land between you and the lake?

Mr. Moyle: We are thirteen miles directly west from the lake. I could not speak positively as to how high it is above the lake, but I think one hundred and fifty feet and there is higher land between us and the lake, the highest ridge is about three miles east of us.

A Member: Have you tried any Wilder Early?

Mr. Moyle: Yes, we have the Wilder Early pear now fruiting. It is very fine.

A Member: Have you got a good shelter from the west?

Mr. Moyle: No, sir, no shelter, we stand them right up and let the wind blow through them.

Mr. Kellogg: I would like to have Mr. Moyle state the soil.

Mr. Moyle: Such as we find in Northern Illinois and Southern Wisconsin, the land is rolling, it is black prairie soil on top and then there are about three feet of clay, then lower down, ten or fifteen feet, there is a good stratum of sand that always has water in it, and I think the pears run down their roots to the water.

Mr. Philips: Do you think the results of your experiments there in growing pears are of any particular value to the State at large?

Mr. Moyle: Yes, I most emphatically do; not of value at La Crosse perhaps, but there is a strip along the lake which is thickly settled, and at the present time they are told by the salesmen that they cannot grow pears, and in many localities they cannot, but I say they should grow them on that strip along the lake.

Mr. Hatch: How much influence has the lake over the climate?

Mr. Moyle: Once in a while we get a little lake breeze, but very little lake breeze; in the summer time we get showers from the very warm wind blowing from the southwest, coming in contact with the cooler atmosphere over the lake, we get thunder



MEMBERS OF WISCONSIN STATE HORTICULTURAL SOCIETY INSPECTING WISCONSIN EXPERIMENT STATION GROUNDS.



A DE SOTA PLUM TREE IN FULL BLOOM.

showers that they do not get over the State, but the influence of the lake there is very little.

Mr. Hatch: How then will you account for the fact that your trees are comparatively free from blight and that you can succeed when they cannot in the interior of the State?

Mr. Moyle: Well, I will tell you, there is more or less of a breeze there all the time, that must be the reason, and that must come from the lake.

Mr. Hatch: What effect will that have on the night temperature?

Mr. Moyle: Why, a marked degree, I think.

Mr. Hatch: That is, it is usually cooler there than it would be as far west as Janesville.

Mr. Moyle: Oh, yes, I should say so.

PLUMS.

By Wyman Elliot, Minneapolis, Minnesota.

I have not been able to conceive the purpose of your secretary in singling me out to write on the subject of plums, when you have a gentleman, a learned professor, who has given you so much of the best thoughts and teachings of the present time on this topic.

The subject of plum growing has been thrashed over so often by so many who have given it very careful investigation, it seems useless trying to throw any new light upon it, unless you believe in the teachings of our boyhood days, when it was, line upon line and precept upon precept, adding here a little and there a little each passing day and if we stop to consider, our whole lives are made up of small incidents, observations, experiments.

At my own home I have been dubbed an innate plum crank; which may possibly account for my being selected to trespass upon your valuable time.

The conclusions here given are drawn from my own observations, with the climatic conditions, soils and environments with which I have been acquainted.

What I say may be of little interest and give no information to the older members of the plum crank fraternity, but will be in the nature of a review of this question of plum growing, with perhaps a few suggestions directed to the younger members engaged in horticulture. First, I would urge them to take up the study of varieties and the growing of seedlings to improve the hardiness of the apple tree and the productiveness and good qualities of fruits in general, remembering you can only become most efficient by selecting some specialty or taking up some particular fad of fruit growing.

I will cite two illustrations of successful seedling raising, not of the plum, but of the apple; the law that governs plum growing is equally good in the production of trees from apple seed.

No. 1 illustrates the possibilities in the seeds of one apple in the hands of an energetic, enthusiastic man. A few years ago I received an apple from A. J. Philips that I might test its qualities. He represented it as the fruit from a Northern Spy seedling, raised in your state. The seven seeds from this apple were planted by a careful Scotchman and from them he has produced five apple trees, early fall, late fall and early winter, the fruit of all fairly good and two have taken premiums at our Minnesota State fair. Very good showing from seeds of one apple.

No. 2 illustrates the most remarkable production of seedlings, from the seed of one crop of fruit from one apple tree, of which I have ever read or heard. H. M. Lyman, of Excelsior, recently deceased, had one Wealthy apple tree, growing alone, a considerable distance from a few large red crab trees, all the fruit trees on the place, as I was informed by him.

He saved the seed from the fruit of this apple tree and planted it, in 1873, in good clay loam soil, on a knoll, in an exposed position and many of the trees are today standing where they originally grew.

He transplanted nearly two hundred into an orchard and gave them cultivation for a few years, then seeded down to grass (the old unsatisfactory method, smaller fruit and less of it). These trees came into bearing and all produced medium, some large sized apples of all colors (green, yellow with blush cheeks, striped) and some of the trees Wealthy type, several of real

merit for quality, representing early fall, late fall, early and late winter, and, out of the whole lot, but one small apple that might be designated a crab, on account of its size, though, in reality, it is a fine flavored apple representing the Wealthy type in color and quality. Some of these seedlings have taken first and second premiums at our state fair.

I say unto you, young horticulturists, go thou and do likewise. In the early pioneer days of the west, the growing of plums was in a very crude way, and, I am sorry to say, there are yet many sections where the plum, apple and small fruits are turned out to grass, as the cattle in spring, to take their chances with the heat and drought of summer and the cold blasts of winter, with no cultivation, pruning, protection or care; still, many wonder why so small a supply of fruit should be grown and that not a very high grade or quality. I am glad to notice a change of heart, or rather of methods, has been inaugurated by many, within the past few years, brought about largely, I think, by the teachings and new ideas brought out at our most advanced horticultural society meetings.

I have watched, the past few years, the top growth and root development of a few varieties of grafted trees and fruit tree seedlings, with considerable interest and satisfaction. There are certain kinds, the scions of which have a very marked influence upon the root, while with other varieties, the roots influence the growth of the scion with which they have been grafted, some causing the roots to produce side or lateral roots with very few tap or penetrating roots, while others cause straight or forked, deep growing roots. The Peerless is one variety that has this feature in its root growth.

In digging one and two year old seedling plums, we find a wide variation in root extension and manner of growth, some pushing out surface feeders with but little tap root, others going deep into the earth and having very few side roots.

I have not made long or close enough observations to learn whether this variation applies to all or certain varieties, my belief is that it is more noticeable in some kinds than in others.

In observing the growth of orchard trees we find a marked difference in size and fruitage when they were of uniform appearance at time of planting and soil conditions seemed identi-

cal. We know some trees will produce more and better fruit each year, than others equally as large; may this not be the result of the greater feeding capacity of their roots?

In many orchards there is a very uneven appearance on account of the variation of growth, this, I think, comes largely from being worked on roots grown from the sowing of seed from many kinds of trees, some from trees of poor root growth, others of medium and a few producing seedlings with strong growing roots. Perhaps some propagators of nursery stock have made similar observations, if so, can they give any rule for creating trees having a uniform growth and fruitage?

The selection of varieties, for commercial purposes, that will adapt themselves to all locations is somewhat problematical, it being almost impossible to fix upon a list that will meet the diverse opinions of a large portion of the most experienced planters, each having their special favorites.

With such conditions I can see but one course to pursue, each individual planter should plant a few kinds having special qualities of size, appearance and productiveness and then determine what are adapted to their locations; of course this takes time but the deciding of many important questions in horticultural pursuits is not done in a day, a month or a year; often it takes decades to determine what is best to plant.

In 1897 there was a much larger exhibit of plums, at our state fair, than usual, and having decided to take up the raising of plum seedlings, as a pastime, I secured all the plums I could, from the exhibitors, with which to make a start in that direction and at each fair since I have solicited as many plums, as possible, for seed; each variety has been planted by itself.

The Knodison cumpas cherry or sand cherry hybrid plum, was on exhibition for the first time, in 1897, and I secured a few pits and planted them; the seedlings have proved part sand cherry and part hybrid plum. Those that reverted are like the sand cherry in growth and fruit of about the same season. Those that retain the hybrid form, grow like the cumpas with true plum foliage. As these have not borne, we cannot tell what the fruit may be but expect a plum, though of what size or quality cannot be foretold.

I also secured a few Aiken plum pits and the trees grown

from them have growth, foliage, fruit and pits like the original, the best tree in the lot, quite productive in fruit, same size and ripening about the same time. We have a large number of seedlings from one to four years old, representing nearly one hundred kinds, each lot recorded by number, describing the variety and a few of their peculiarities. We are noting the hardiness, growth, foliage, bud, and, at the proper time, will take note of the flowering season and examine the fruit to see if any there be, worthy of farther trial.

Seedlings, whether of plum, apple or other fruit, do not always show, at first, all their good qualifications, taking, in many instances, until the third or fourth year after coming into bearing and then may be a little tardy, unless top worked on to some known vigorous variety where there is proper affinity.

The growing of seedlings is fascinating when once entered into with a love and taste for investigation; often a seedling from some choice seed is watched with as much care as a full blooded calf by a breeder of thorough bred cattle.

There is a streak of humanity in all when caring for that which most interests us, with horticulturists especially, if it is a plum or apple tree that has been watched from the tiny seedling to full fruitage.

Dumas, in one of his popular works, speaking of a certain telegraph operator spending his leisure moments in the growing of fruit and flowers, says, "Every man has a devouring passion in his heart, as every fruit has its worm."

At our state fair, in 1897, noticing the great variety and appearance of the plums on exhibition by exhibitors from different sections of the state and noticing also the great similarity of fruit in size, color and quality, though exhibited under different names, I became much interested and decided to investigate why, in many instances, there was such a marked resemblance and soon discovered there were several names for the same fruit, the name placed upon an exhibit often gave no assurance it was the correct one. In one instance no less than four names were given the same plum, which was correct, which spurious, or were none correct was the question. The variety under consideration was what Prof. Goff describes as Bender though I think it should be changed to Paul Wolf if honor were given to the orig-

inator of this very valuable, medium early plum, well adapted to loamy clay soils. In the section where it originated, near Chaska, Minnesota, it is considered one of the most valuable commercial plums under cultivation and being a variety that sprouts readily, it has been mostly propagated that way. It is brought to our central market by the wagon load, often in wheat sacks and always commands a good price though not handled in the best manner.

The raising of new varieties, from seed, should, by all means, be encouraged but care should be exercised by all planters to learn which are and which are not adapted to their soils and locations; there will be much misguided effort, unless this be done or some method be devised by our horticultural societies and experimental stations to trace up and sift out the unworthy candidates presented each year for approval, possessing hardly more recommendation for patronage than a catchy name with a long rosy description affixed to catch gudgeons.

Mr. Philips: Two years ago at our State Fair you showed me a small free-stone plum that I thought was about as good in quality as I ever saw. What success have you had with that? I think you said it was raised by a German, it was a small plum and a free stone.

Mr. Elliott: That was Whitman's No. 1. Now, that plum I consider as good a plum perhaps as you have in the State. That is under consideration up there; Prof Green has it up at the Station, and he thought it was quite a good plum, but it was owned by a German and he was very much afraid that some one would get hold of it and he kept it very close, until he had some thousand trees of it planted, and he told me this year he got \$2 a bushel for his whole crop.

Mr. Gibbs: We have paid a great deal of attention to the native plums in Minnesota and the Dakotas. We have demonstrated over there, as I presume you have here, that in the native plum there is a quality wanted for home use, so that we really do not need the European plums, and also a certain quality that makes them very popular in the market, so that there is money in plums. One word more, there is a popular opinion

that all of the native plums are impotent to fertilize their own blooms. Now, as a general rule, it is safe to say that they are weak in that regard, but there is the De Soto which is perfectly independent. Whoever saw a lone thrifty De Soto, no matter how far away it was from other plum trees, that failed to bear any crops?

Mr. Smith: In Mr. Elliott's paper, he spoke of the lack of desirable formation of tap root in the seedling. I would like to know if anyone has made any experiments in the line of cutting the tap root of the seedling to cause it to make a different style of top.

The President: I will say that we took up this year some little seedling plants after they were started and transplanted them. Of course in that case every time the tap root was taken off. They have made a very nice growth, but I do not know if there is any particular change in the top, so far as I have observed.

Mr. Elliott: The method that Prof. Hanson of Brookings, of South Dakota, pursues in raising apple seedlings is to start them in boxes and when they have got the second set of leaves, he transplants them and prunes the tap root so as to make them throw out side shoots.

Mr. G. J. Kellogg: I would like to ask Mr. Elliott if in the growing of the seedlings from your known varieties of plums, have you made any marked improvement, are they better than the parents, as we have demonstrated here at our own Experiment Station.

Mr. Elliott: Well, my experiment has not extended far enough yet, it is only a recent thing and many of the trees are only two and three years old, so that I cannot give you at the present time very much information on that.

Mr. Patton: I can answer Mr. Kellogg's question in the affirmative from experience in growing seedlings from the Hawkeye and from the Stoddard. I have a plum from the Hawkeye that is fully as large and more beautiful in color and form and quite decidedly superior in other respects. Then I have a plum from the Stoddard that I should say is at least twenty-five per cent. better than the parent in quality and much superior in

bearing, so that my experience with known varieties is positive as far as that goes..

A Member: I would like to ask Prof. Goff what success they have had with the Japanese varieties.

Prof. Goff: We find that the trees grow very quickly for a time and bear very generously when the flower buds are not killed or when the blossoms are not destroyed by frost, but they are sun-scalding below and we have very few of the trees left at the present time; the sun scald seems to be the worst enemy.

A Member: I would like to ask about the Moore's Arctic.

Prof. Goff: We have fruited the Moore's Arctic and we like it in quality. It seems to be hardy, although our first trees died, but the common opinion seems to be that it is a hardy plum.

CO-OPERATION IN MARKETING.

By C. G. Bassett, of Michigan.

In the words of the old colored preacher, "Before I begin my talk, I want to say something." I do not presume to come to you with an idea that I can present any new or startling facts. I have frequently noted that the value of gatherings of this kind lies not so much in the new ideas received as in the inspiration or enthusiasm, which results from an exchange of experiences. To any wide awake man the spirit of enthusiasm is contagious and, noting the successes of a friend or rival, is sufficient to arouse in him the determination to excel in a similar line. Nine-tenths of life's failures are due, not so much to an ignorance of methods, as they are to a want of the proper energy to do as well as we know how. So, if I may be able to add my mite in making this an "inspiration meeting" I shall feel amply repaid.

This is an age of co-operation. Competition has been so sharp and the desire for increased profits is so great that we find nearly every class of business well organized for mutual profit. The world never saw such combinations of capital as have lately been formed, under what we are pleased to call the "trust" system. In some lines of business competition had destroyed prof-

its and a combination was necessary to cheapen the cost of production or increase the selling price of their products, or both.

Let us look at the horticultural situation and see if our present methods are not in need of improvement. As a result of careful investigation, I am convinced that a bushel of peaches for which the consumer pays \$1.50, does not net the average Michigan grower over fifty cents! This means that the grower pays twice as much for getting his fruit to the consumer as he receives for his own labor in producing that fruit. Is such a condition fair? What ordinary business is there which will stand such a constant drain and profitably exist?

These facts are probably well known to you all, so that it is very simple to diagnose the disease from which our business suffers. What is the remedy? There's the rub. The threadbare saying, "In union there is strength," has become an axiom, but these abstract propositions are not enough to solve the problem. We want to know *how* to apply the remedy to the disease, so as to get practical results. I know of no better way of showing how co-operation can help us than by telling you of some ways in which it has aided us in the fruit belt of western Allegan county, Michigan.

One of the first drawbacks that we had to contend with in the Michigan fruit belt was the cost of transportation. The location of our orchards is such that we can patronize either the railroad or the boat lines, but there has been no competition between them. An express company operated over the fruit train for about fourteen years, furnishing very poor service and stubbornly maintaining a six-and-one-half-cent rate on small baskets to Chicago. We had no organization, and the efforts of individuals to get better or cheaper service were of no effect.

The season of 1888 brought such low prices for fruit that it was evident that something must be done, and co-operation was resorted to. The Fennville Fruit Shippers Association was organized in 1891 and the "Granger System" of shipping fruit was adopted. The success of our association under this plan has been wonderful. We have a local agent of the association who receipts for and loads the fruit into ventilated cars, holding about 2,500 small baskets each, for which he

receives \$2.50 per car. A special fast fruit train starts from Fennville at six o'clock every evening, Saturdays excepted, for Chicago. The cars are all billed to our Chicago consignee, who does the unloading and attends to the freight, shortages, etc., receiving for this service \$5.00 per car.

As a result of this co-operation, we have been able to secure the adoption of a standard climax package, which has resulted in a saving in their cost of more than one-half. The freight rate has been lowered from the express rate of six and one-half cents to two and one-half cents, and, the boat lines having to meet this competition, every shipper in our fruit belt has been equally benefited by the operation of our association, which ever way he shipped. All shortages have been promptly paid, which is quite a different experience from that we had with the express company. The association has actually reduced the cost of packages and transportation to about one-third of what it was under the old plan. It is impossible to estimate the actual amount of money saved by the work of this association, but some idea can be imagined when I tell you that the very first year the association did business it saved one large grower fully \$1,000. In one year our fruit section shipped 6,000,000 small baskets of peaches, and the saving to the growers that year was over \$200,000.

Not only have we obtained better service at much less cost, but it has been done with a cash profit to the association. This profit, amounting to many thousands of dollars, has been expended in the grading and graveling of our public highways, until we now have reconstructed several miles of first class roads. Before our association undertook this work, 200 or 250 baskets were considered a good load, while now our teams handle more easily 500 to 700 baskets. By our unity of action we have also gotten the railroad to donate 300 cars of gravel for this road building. We find that where a single individual has trouble in getting the ear of the railway officials, the representatives of an organization of 400 shippers receive a most respectful and gracious hearing.

So much for what we have been able to do in reducing the cost of transportation. There is another feature I desire to refer to and that is the way in which our growers have co-oper-

ated in the manner of packing and selling our fruit. It is generally conceded that the old method of consigning fruit, to be sold on commission, is entirely wrong and our local horticultural society has been working for some time, trying to establish a local fruit market and get outside dealers to come there and buy. Advertising booklets have been sent out, with the result that we have buyers with us all through the season, and their competition has kept prices fairly good. During the past three years, from eighty acres of fruit, I have not consigned to the amount of \$25, but have sold at home at very satisfactory prices.

But there is another form of co-operation which, with us, promises to be of permanent benefit—the central packing house system. We have five of these packing houses at Fennville and, although the system is not fully perfected, it has already demonstrated its efficiency in handling and marketing the products of large orchards. Usually six or eight growers combine and erect a packing house beside the railroad. Their fruit is brought direct from the orchards to this central packing house, where it is carefully graded and packed, each grower receiving credit for the number of baskets of each grade. The foreman and packers, having no interest in the fruit, pack top and bottom alike and every basket can thus be guaranteed. Solid cars of one straight grade can thus be purchased any day during the season, and we find that buyers will pay more for this fruit than where they have to drive around the country and pick up a load, of as many grades as there were packers.

The obstacles in the way of this central packing house plan may be mentioned as: First, what may be termed the natural conservatism of the average grower; second, a lack of confidence in his fellows and of the results to be obtained by association and combination of interest; third, some expense in putting up and equipping a plant; and, fourth, enterprise and confidence in the outcome to carry on the undertaking. A rather high order of ability and good judgment, combined with some experience, is necessary in managing such an undertaking, and the manager must command the confidence of his associates and patrons.

The principal advantage is the application of modern and systematic business methods to the fruit industry. Organization is the basis of modern successful business operations, and only those lines of business that are well organized are successful in a marked degree. The statement is often made that an organization among farmers is sure to fail, that farmers will not hang together, etc., ad nauseam. I think that the experiment among our packing houses disproves this statement, and I believe that the tendency among progressive fruit growers is towards such organizations. I believe that these separate packing houses will eventually grow into a federation, with a central head, that shall keep in touch with all of the principal markets and keep the units of the federation informed regarding markets and prices,—a fruitgrowers' "trust," if you please.

The packing houses furnish a more reliable and desirable quality of fruit and Chicago prices are obtained for the fruit at the point of shipment, thus effecting a saving of nearly half the expense, as noted above. It is evident that the dealer in Buffalo, who would be willing to pay 75 cents per bushel for a car of peaches in Chicago, of the uncertain and damaged quality that he would get there, would willingly pay the same price for fresh, straight-packed fruit here, as the expense of shipping is no more; and so the grower receives 75 cents at the packing house for fruit for which the commission man returns the consigner 50 cents. Experience has abundantly proven this self-evident assertion.

I trust that you will pardon me for speaking so at length about what we have done in Michigan, but our successes have opened our eyes to the possibilities of what may be accomplished by a unity of action. If agriculturists could be brought to realize what co-operation might do for them, who could live without paying them tribute? In my experience among growers, I have found among them *parasites*, who would oppose co-operation in every form, for no other reason than that the less his neighbors know the greater his opportunity to profit by their ignorance.

Co-operation is the beacon light of emancipation to the farmer and the only means by which that traditional fear and suspicion, born of wrongs and injustices as far back as Jacob and

Esau, can be dispelled. Where co-operation is the watchword, the community is immune from the adventurer, who figures farmers generally as his legitimate prey.

Mr. Hatch: I would like to ask Mr. Bassett if they have salesmen who are authorized to make all their sales?

Mr. Bassett: We have not done that yet. This fruit is consigned to Chicago commission houses, although anybody can ship anywhere he wants to. That fruit train belongs to us; it starts when we say go, and it gets there; if it does not get there, we simply go after it.

Mr. Hatch: Then there is no co-operation in the sale?

Mr. Bassett: No, but it is in the packing houses that we get co-operation. Of course this paper is not practical to Wisconsin; I am sorry I did not realize the difference; I did not understand just your situation, I appreciate it now more fully. Our conditions, of course, are different; we have a larger body of fruit in one place, and we can do this that I told you about; but the thing I want you to do is to organize, organize in something,—your own individual needs are known better to you. If we had not organized, it is an actual fact that we would have to go out of business.

Mr. Hatch: In order to do business today, you have got to do business in car lots. Now, in order that farmers may get sufficient fruit together to go in car lots, they have to have organizations. The unit of business must be car lots; you cannot sell it in any other way.

STORAGE OF FRUITS.

By Professor J. C. Blair, of Illinois.

The fruit grower, like the grower of any commodity, is chiefly concerned with two factors, viz., the art of production and the art of selling. Both of these factors must be given due attention if the grower is to attain that degree of success which

he should. He may know the fundamental principles of fruit growing and be able to put into the fruit package a strictly No. 1 or fancy article. This, however, does not always insure a return to the grower in keeping with the grade and quality of the product. It is true that high class fruit properly graded and properly packed will often take care of itself and net handsome returns to the grower when placed in the hands of the commission man, or even when placed upon the general market. Unfortunately, however, this cannot always be relied upon, and so we have come to realize that the producer must give serious attention to the art of selling. It is certainly to his advantage that this business end of things be no longer left with speculators who are yearly securing larger returns for their labors than are the growers of the product. It is as much our business to market what we grow as it is to grow it. It is not enough for us as fruit growers to produce fancy fruit; we should see to it that that fruit goes into the hands of the consumer and that the prices paid us are entirely in keeping with those high prices usually paid the commission man or the speculator. That this can be successfully done needs no argument before such an intelligent body of horticultural people as I see assembled here this afternoon. Many of our best fruit growers throughout the country are attending to the business side of their affairs in a business-like way, and as a result of these additional efforts are reaping handsome returns.

The reason why most fruit growers have hitherto given little attention to the selling of their products is because of the fact that their entire energy has been given to the production of the fruit and its preparation for market. Their product is perishable, and if storage houses are not within easy reach, the fruit must be disposed of at once. I have, therefore, come to believe that most commercial growers, especially those of apples, can afford to build a special structure for the reception and holding of their fruit until the harvesting season is past and until they can devote sufficient time to the studying of the market and the placing of their fruit where it will bring the best returns. I believe, too, that the grower can better afford to do this himself than to turn his fruit over to the cold storage people who make a business of that sort of thing. In

many cases this would not be true, but in most cases I believe it is. It is at least reasonable to suppose that a community in which apples are grown somewhat extensively can well afford to build a structure in which apples may be stored for a considerable length of time if advisable.

These questions have been so impressed upon us in Illinois that the University of Illinois at last determined to give the matter careful examination. The first problem before us, therefore, was to determine whether or not it is possible for the commercial grower of apples in any of the fruit sections of the state to construct a cold storage house of a capacity of from two to three thousand barrels, cooling the same in the early part of the season with natural or artificial ice, and later in the season depending entirely upon natural temperature. If such a structure were possible, then would the *amount saved the grower* warrant the outlay necessary for the building of such a structure? In order to give this matter a thorough test, we erected a building at Neoga, Cumberland county, at the intersection of two lines of railway,—the Illinois Central, and Clover Leaf. This building cost us three thousand dollars, and with artificial ice at a cost of \$2.30 a ton, we are keeping successfully two thousand barrels of apples at a temperature of thirty-three degrees. This has required seventy tons of ice, which seems to be a sufficient quantity to hold the building at a temperature of thirty-three degrees until April. Leaving out of consideration the cost of the ice, and figuring storage charges on the basis of what would have to be paid a cold storage warehouse for the holding of this fruit, we have a return of $33\frac{1}{3}$ per cent. on the original investment first read. It would require three years to pay for the building at this rate, with a relatively small amount to be figured on each year for ice. One hundred tons of ice is ample to give the desired temperature throughout the entire storage season, and if natural ice can be harvested, it need not cost over \$1.00 or \$1.25 per ton.

Our efforts so far with these experiments have proved eminently successful, and our fruit growers in Illinois are much interested in the problem and the final outcome of the experiment. Certainly if this storage is of interest to our fruit grow-

ers, it must be to the fruit growers of Wisconsin, for natural ice can always be had at less cost to them than to our growers. I will, therefore, give you in detail the character of this building which was erected at Neoga.

DETAILS.

The building is a one-story structure 40 feet by 81 feet, with 14 feet studding. The fruit storage or refrigerating room is 40 feet by 40 feet, with but one door, that at the west end, entering to the cooling room, which is 10 feet by 40 feet. Adjoining the fruit storage room at the east is the ice storage space, 28 by 40 feet. The arrangement is clearly shown in Plate No. 1, which gives the ground plan of the structure. Looking at Section BB we find the character of construction shown in the detail adjoining. BB refers to the outside walls of the storage room proper. Note that the several walls differ in construction. Turning your attention to the details BB we see that 2×4 studding 14 feet high and 18 inches on center are faced on the outside by a double thickness of "Diamond A Red Rosin Sized" paper, and then comes a sheathing of $\frac{7}{8}$ -inch hemlock flooring. On this sheathing are again placed $\frac{7}{8}$ -inch strips vertically $2\frac{1}{2}$ feet apart, shown at II in the details. Upon these strips is nailed the dropped siding of hemlock. Note, however, that this exterior wall, as seen in Plate No. 3, furnishes a free air space which continues from the sills to the eaves, thence to the ridge-pole, where the air escapes. The hot sun beating on the roof or sides of the building causes the air in this outside air space to rise and escape at the ventilators, as shown in the cross-section of the ridge-pole in Plate 3. On the 2×4 's, from the inside, is tacked a double thickness of building paper, the same paper being used in each case, and to this also has been spiked the 2×2 's. Then comes another double thickness of paper, then a sheathing of $\frac{7}{8}$ -inch lumber, and again $\frac{7}{8}$ -inch strips, then another double thickness of paper, and then a sheathing of $\frac{7}{8}$ -inch lumber. As seen in the cross-section of the walls and roof in details figured in Plate 3, this construction extends throughout the walls and roofing to the top of the refrigerator. It should be noted, however, that this applies only to

the walls and roofing of the fruit storage room, and varies to a certain extent in the other portions of the building, as seen in the details figured in Plate 2. It should be further noted, however, that the insulation on the walls extending to the roof of either side of the fruit storage room has been increased beyond that shown in the details. This was due to a mistake on the part of the builders. In other words, there should appear another layer of $\frac{7}{8}$ -inch strips, and consequent air spaces, then another double thickness of paper, and then a sheathing of $\frac{7}{8}$ -inch lumber. This gives a total of four dead air spaces, and an outer free air space, five double thicknesses of paper, and five thicknesses of sheathing, including the weather boarding. The vertical air spaces occasioned by the 2×4 's, 2×2 's, and $\frac{7}{8}$ -inch strips have been broken up at intervals of every five feet, thus insuring greater efficiency from the air spaces themselves. In other words, the smaller the dead air spaces, the less liability there is for imperfections in the insulation.

Looking at the ice storage room, we find the walls at AA differing from those at BB in having one less thickness of sheathing and of building paper and one less dead air space, the outside construction remaining the same. The east wall at CC, as shown in Plate 1, shows the same construction as AA, excepting a free outer air space and one thickness of sheathing are omitted. At DD, the wall between the ice storage room and the fruit storage room, and also between the fruit storage room and the cooling room, we find an entirely different construction from that seen in the former details. Two-by-fours, the same distance apart, have a double thickness of building paper on either side and a sheathing of $\frac{7}{8}$ -inch lumber on these. The side next the fruit storage is then faced with $\frac{7}{8}$ -inch strips 18 inches on center; upon this is another double thickness of paper, and then one additional sheathing.

The refrigerator, or ice box proper, the floor plan of which is shown in Plate 2, is 20 feet by 40 feet. A cross-section of this refrigerator is shown in the upper part of Plate 3. This box is supported by the ten wooden posts, 10×10 inches, 14 feet long. Lying on these posts crosswise are 3×14 -inch joists 12 inches on center. These joists are protected from

the water by galvanized iron caps. The water falling on these is caught by the galvanized iron troughs suspended between the oak joists and from thence it drains into galvanized iron gutters running east and west. From these latter gutters the water is drained through down spots into vitrified tile. Upon the caps proper, overlying the oak joists, are 2×2 oak pieces 2 inches apart, as seen in the details of the floor of the refrigerator in Plate 3. The ice rests directly upon the 2×2 oak pieces, and is so piled as to allow the cold air to drop directly away between the oak strips and the joists of the fruit room below. By means of the false ceiling, as shown in the upper part of Plate 3, the air is deflected to the outer walls, and thence follows the ceiling back into the upper part of the refrigerator. The walls of the refrigerator, which are 6 feet high, are boarded with matched flooring to within two feet of the top, thus admitting the warm air following up from the ceiling and walls. Above the refrigerator we find 2×6 's 18 inches on center covered above with double thickness of paper and then a layer of fence flooring. On the under side of the 2×6 's, we find another layer of double thickness of paper, then sheathing, then a $\frac{7}{8}$ -inch dead air space, then paper, then another sheathing. Through this ceiling, as shown in Plate 2, are three trap doors for ventilation. When the one door is opened, as well as the ventilators, perfect ventilation is secured. The capacity of this refrigerator is 108 tons of ice.

Time will not permit us to give in detail the construction of all the various parts of the building. We must leave the interested reader to make this out for himself from the plates and diagrams. The entire matter, however, is to be issued from the Illinois State Experiment Station in bulletin form. In closing this brief account of this structure, we wish to emphasize the necessity of having the dead air spaces perfect *dead air spaces*. The workmen must be carefully watched to see that all joints are close fitting and that the paper is never broken.

COST OF STRUCTURE AND FIRST ICING.

Lumber	\$1,516 74
Foundation, etc.	194 73
Paper	113 10
Hardware	241 48
Painting	62 75
Labor	777 99
Miscellaneous	40 00
Traveling expenses and drawings	133 62
Total cost of construction	\$3,080 41
First icing, 80 tons at \$2.30 per ton	184 00
Total cost to date	\$3,264 41

The cost for the construction of a building of this character must always vary for different localities, depending upon nearness to railways, character of labor, etc. Our building at Neoga was built as cheaply as possible, taking into consideration the perfectness of the insulation. In this connection it might be well to add that every effort was made during the drafting of the plans to have the details as simple as possible, in order that professional architects and builders would not be called into service for any great length of time during the erection of the building. The fruit grower living in the remote districts where professional help could not be secured, was ever kept in mind, and the building planned and constructed to meet the conditions existing in these out-of-the-way places. How well we succeeded in this direction is evidenced by the fact that the building, with one exception, was built entirely by cheap labor,—men not even professional carpenters. It was necessary, however, to have the work under the direct supervision of someone thoroughly alive to the importance of the undertaking from the fruit grower's standpoint. Mr. H. A. Aldrich of Neoga, a fruit grower of wide reputation, had entire supervision of the construction of this building.

RECEPTION OF FRUIT.

It was not possible for the Illinois Experiment Station to buy the fruit necessary for the test, nor was it possible to assume the risks entailed by a possible loss of fruit. The following rules were therefore adopted and distributed early in November:

RULES GOVERNING THE RECEPTION OF FRUIT AT THE STATE
EXPERIMENT STATION COOL STORAGE BUILDING,
NEOGA, ILLINOIS.

1. Any Illinois fruit grower may deposit apples in the building in quantities not exceeding five hundred (500) barrels, or less than five (5) barrels, providing that the rules and regulations of the Institution are complied with, and providing that the full capacity of the building has not been reached at the time that the application is filed.

2. Any fruit deposited in the building shall not be removed without at least three days' notice of such intention having been first given to the Experiment Station, Urbana, so that the Station authorities may be enabled to secure full records regarding the condition of the fruit at the time it is withdrawn.

3. The building will be open for the withdrawal of fruit not oftener than once each week.

4. At least ten per cent. of the fruit deposited by each grower must remain in the building until in the opinion of the Station authorities the objects of the experiment have been attained.

5. The fruit deposited in the building will be exempt from storage charges.

6. Nothing but No. 1 fruit will be received.

7. The Experiment Station will carefully watch the condition of the fruit, and if any signs of decay be discovered the owner of the same will be notified of that fact; but all fruit deposited in the building must be at the grower's risk.

8. All packages, bins, etc., holding fruit, while on deposit at the building, and all labor connected with the handling of the fruit, shall be at the expense of the owner of the same.

9. The amount of fruit stored in bulk will of necessity have to be governed by the number of growers desiring storage facilities.

10. In no case will the fruit be allowed to rest directly on the floor or against the walls of the building.

J. C. BLAIR,
Chief in Horticulture.

Approved, E. DAVENPORT,
Director.

As a result of these regulations nearly two thousand barrels of fruit were secured from fruit growers in southern Illinois. The fruit was all put in about the same time and the building was not iced until after this storing was completed. The following rules governed the placing of the fruit:

DIRECTIONS FOR STORING FRUIT AT THE STATE EXPERIMENT
STATION COOL STORAGE BUILDING, NEOGA, ILLINOIS.

1. Place one-inch strips on the floor under all tiers of boxes and two-inch strips under barrels. Under bulk fruit place a false floor made of boards not more than six inches wide, with one-inch space between and raised four inches from the floor.
2. Place all tiers of boxes or barrels at least two inches (better three) from walls. This applies also to bulk fruit and fruit in bins.
3. Leave a one-inch space between all tiers of boxes.
4. Bins should be from eighteen to twenty inches high, and a free space of at least one inch should be left over fruit in each bin or compartment.
5. Lay all strips on floor perpendicular to the east and west aisle in the storage room, in order that the resulting air spaces may be free for the circulation of the cooled air.

J. C. BLAIR,

-Chief in Horticulture.

Approved, E. DAVENPORT,
Director.

TEMPERATURES.

Immediately after the ice had been installed in the refrigerator the temperature began to fall rapidly until 35° was reached, and this temperature has been steadily maintained until the present date, February 1, 1902. An outside temperature of 15° below zero made no appreciable effect upon the inside temperature, which certainly speaks volumes for the character of the insulation.

Mr. Kellogg: I would like to ask Prof. Blair if the fruit stored at the present time was fully matured at the time of storing.

Prof. Blair: Some of it was and some of it was not.

Mr. Kellogg: Do you think it is better to have it fully matured at the time of the storing?

Prof. Blair: Of course if the fruit is not fully matured at the time it is stored, it will keep better. You take a cold storage warehouse: they always like to have the fruit come in picked a little bit green, and of course if we were to go into the discussion now of the proper method of handling fruit for our people who are running these large commercial plants, we would have a big discussion there. I know that about eighty-five per cent. of the fruit that was sent to Chicago this year was not properly handled before it went there, and there are going to be some big losses in consequence of that.

Mr. Barnes: Are you storing any of the Duchess or Red Astrakan?

Prof. Blair: No, our building was not completed in time for that this year, but we are going to carry that on next year. It does not usually pay to store summer apples unless it be for a few days, until you can get the fruit together and then devote some attention to the market.

Mr. Thurston: If that were constructed in northern Wisconsin, where the temperature falls to 40 below, would not you need a fire in there?

Prof. Blair: No, sir. Now, here is a concrete illustration: This building was maintaining a temperature of 33 degrees, the temperature outside went down to 16 below zero; there was absolutely no variation inside until we opened the door.

Mr. Thurston: That was for a short period in central Illinois, but for a long period in northern Wisconsin.

Prof. Blair: Well, I am not able to speak for that, but it seems for that point that it would not vary.

Mr. Bassett: The question was asked if there had been any experiment along the line of storing the Duchess with the fall apples, and I want to state what I know to be a fact in regard to that, more especially from the statement of a gentleman by the name of Steele, who buys perhaps more fruit in Michigan than all the others put together. The men who are making money out of your apples are the ones who are putting them in cold storage. Mr. Steele buys Duchess apples, he has bought apples all over the country, and I know for a fact, although he does not advertise it, that nearly every apple he buys goes into cold storage, because he wants to wait until the glut of

your apples and our apples goes by, so there are no Duchess on the market regularly; then he brings out from his cold storage those fancy Duchess and gets a fancy price, and that is where he makes his money.

THURSDAY MORNING SESSION.

On motion of Mr. Edwards, Professor Taylor, of Omaha, was made honorary member.

Reports of superintendents to Pan-American exhibits being next in order, reports were read as follows:

REPORT OF COMMITTEE ON AWARD OF WILDER MEDALS.

By George J. Kellogg.

The committee on Wilder Medal awards begs to report that it has examined the fruit placed on exhibition in the Horticultural building and recommends that the following medals and awards be given:

The following Silver Medals were awarded:

Los Angeles Chamber of Commerce, Los Angeles, Cal.: General display of fruits and nuts.

Ellwanger & Barry, Rochester, N. Y.: Display of fruit. Pears, 131 plates; plums, 50 plates; grapes, 52 plates; apples, 90 plates; total, 323 plates.

M. Pettit, Winona, Ont., Canada: Collection of 131 varieties of grapes.

Albert Pay, St. Catharine, Ont., Canada: Display of fruit. Peaches, 21 varieties; apples, 3 varieties; quince, 1 variety; grapes, 32 varieties; plums, 23 varieties; pears, 26 varieties; total, 106 varieties.

Kansas State Horticultural Society: Collection of fruit. Apples, 140 plates; peaches, 14 plates; pears, 21 plates; plums, 6 plates; grapes, 31 plates; total, 222 plates.

Ontario Fruit Experiment Stations, L. Woolverton, Secy., Crimsby, Ont.: Display of fruit. Apples, 119 varieties; grapes, 20 varieties; plums, 22 varieties; pears, 43 varieties; total, 215 varieties.

Horticultural Department, Cornell University: Collection Hybrid plums, pears and grapes.

- T. S. Hubbard Co., Fredonia, N. Y.: Fifty varieties grapes.
 Geo. S. Josselyn, Fredonia, N. Y.: Sixty varieties grapes.
 Missouri State Horticultural Society: Display of 900 plates fruit.
 Wisconsin State Horticultural Society: General display of fruit.
 Theodore Williams, Benson, Nebr.: Collection of Seedling and Hybrid plums, and as a recognition of valuable work done in cross-breeding plums.
 Oregon State Fruit Exhibit: Display of fruit, in charge of H. E. Dosch.
 Washington State Fruit Exhibit, in charge of Chas. H. Ross: Display of fruit.

The following Bronze Medals were awarded:

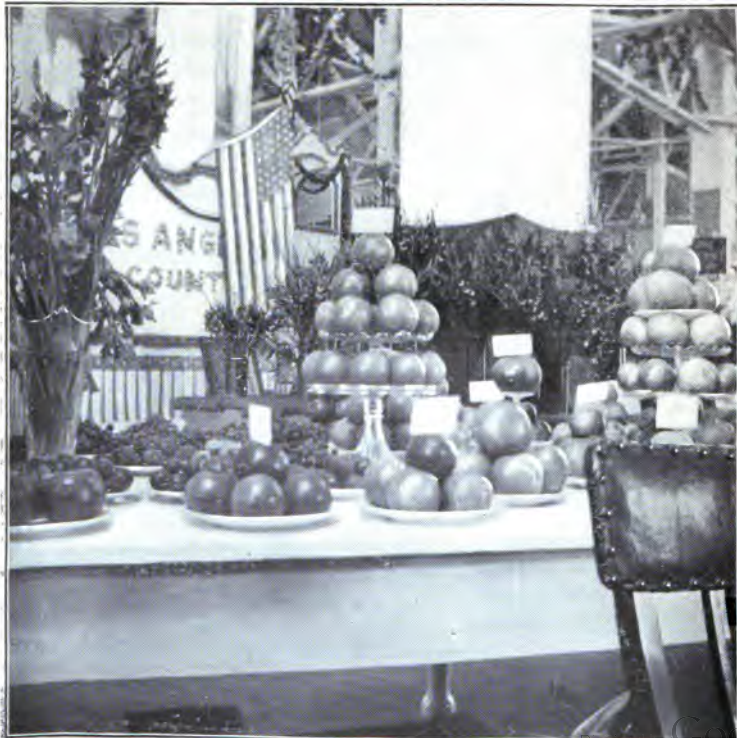
- C. C. Shaw, Milford, N. H.: Collection of apples.
 W. M. Orr, Fruitland, Ontario, Canada: Collection of fruit. Grapes, 5 varieties; peaches, 5 varieties; plums, 20 varieties; pears, 10 varieties.
 Michigan Agricultural College: 28 varieties pears.
 G. E. Rowe, Grand Rapids, Mich.: An exhibit of commercial fruit of this day, Sept. 13, 1901. Pears, Angouleme (Duchess), Bartlett; grapes, Worden, Delaware; Peaches, Elberta, Engle Mammoth; plums, Wickson, Grand Duke; apples, Wealthy, Maiden Blush.
 South Haven Sub-Station, Michigan Agricultural College: Collection of fruit. Pears, 14 plates; peaches, 20 plates; grapes, 4 plates; apples, 9 plates; quince, 1 plate.
 Maine Pomological Society: Display of fruit.
 Orlando Pineapple Association by C. E. Howard, Orlando, Fla.: Exhibit of pineapples (Smooth Cayenne).
 Luther Putnam, Cambridge, Vt.: Collection of 33 varieties Vermont apples.

The following received Honorable Mention:

- Exhibit by Los Angeles Chamber of Commerce:
 Fred Pfeifer, Jacksonville, Fla.: Carson pomelo exhibit.
 Southern California Fruit Exchange: Valencia late oranges.
 C. W. Leffingwell, Whittier, Cal.: Eureka lemons.
 New Hope Fruit Farm, Santa Anna, Cal.: Fall Pippin.
 A. P. Griffith, Azusa, Cal.: Citron of commerce.
 Ludwig & Mathews, Los Angeles, Cal.: Hungarian prunes.
 Rivers Bros., Los Angeles, Cal.: Black Morocco grapes.
 Silas Wilson, Atlantic, Ia.: Exhibit of McPike grapes.
 W. E. Rowe, Michigan State Fruit Exhibit: Exhibit of commercial plums. Wickson, Washington, Pond Seedling, Duane Purple, Lombard.
 Roland Morrill, Benton Harbor, Mich.: Exhibit of Elberta peaches.



PICKING STRAWBERRIES AT APPLETON.



WOLF RIVERS AT PAN-AMERICAN.

- S. Cooper, Delavan, N. Y.: Photo. Pan-American strawberry with potted plant bearing fruit.
G. H. Gibbons, Winter Haven, Fla.: Exhibit of Hart's late orange.
W. B. K. Johnson, Allentown, Pa.: Collection apples, pears, peaches and quinces.

In addition to the above, the committee noted the following exhibits:

- F. M. Benham, Dimondale, Mich.: Wolverine apples, which at this time were not sufficiently mature to test.
G. E. Ryckman, Brocton, N. Y.: Chautauqua climbing currant, an interesting form of a trailing currant bearing fruit of the size and appearance of Red Grape.
E. P. Beebe, Elizabeth, N. J.: 2 plates sweet apples for exhibition only.
Delaware State Board of Agriculture, Dover, Del.: Exhibited apples, pears and peaches.

Your committee wish to recommend that fruit which is placed on exhibition for Wilder Medals should be forwarded for that express purpose, and should not be allowed first to compete in other exhibitions which may chance to be open at the same time and place.

F. M. HEXAMER,
N. F. MURRAY,
E. S. GOFF,
W. J. GREEN,
W. T. MACOUN,
JOHN CRAIG,
Committee.

THE WISCONSIN FRUIT EXHIBIT AT THE PAN-AMERICAN.

By William Toole.

As a call to look up fruit to be exhibited by our society at the Pan-American was expected, the orchards had been looked over somewhat, and the general scarcity of apples noted, but it was not fully realized how scarce good apples were until after President Loepe had sent out word in July that we must

proceed at once to gather fruit for the Wisconsin Horticultural Society's show at Buffalo.

We knew in advance that 1901 was to be an off year, and the extremely hot weather had prepared us to expect a premature dropping of fruit from the trees, but gouger and codlin moth were doing more to make good apples scarce than the off year and hot weather combined. If it is true that damage to fruit by these insects can be prevented by spraying, then many hundred dollars were lost to Sauk county orchardists the past season by neglect, and we could have saved enough in our county by spraying to have provided outfits and insecticides enough for all of the orchards in Wisconsin.

A careful view of the situation was not encouraging, and we were all glad when at the summer meeting at Madison A. L. Hatch told us he had left Parsons and his fruit show in good shape at Buffalo, and that our Wisconsin fruit exhibit had found favor in the eyes of the people and was a welcome addition to the horticultural show at the Pan-American.

I reached Buffalo on the night of September 13th, and the next morning we were all grief-stricken by the news of President McKinley's death. Besides Superintendent Parsons, President Loope and George J. Kellogg were there, also Mrs. Parsons and Mrs. Timann. The Exposition was closed on Saturday and Sunday, but Friend Parsons was able to get me within the gates once and I saw our fruit just as it had been decorated to honor a special visit which President McKinley

had been expected to make to Wisconsin exhibits, when he was stricken by the assassin. The decorations were immediately draped in mourning and it was decided to have a picture taken of the exhibit, just as it was when it should have been viewed by our beloved president, and as it was when the Wilder medal was awarded to the Wisconsin Fruit Exhibit by the American Pomological Society. It can be readily understood that this picture is to us a souvenir of a very memorable occasion.

With enthusiasm subdued by the occasion, our people were much gratified that our fruit had been so much noticed and complimented. It would have been quite natural if friend Parsons at that time had felt solicitous lest the display, which in

his care had brought so much honor to Wisconsin, might possibly be allowed to fall away from the high standard of excellence he had established. But George J. Kellogg was there—an indefatigable worker and ever solicitous for the honor of Wisconsin horticulture. During the sixteen days of my attendance, and to the moment when I left, it was over and again told us by visitors that Wisconsin had the best show of apples in the building, and the apple holds first place above all fruits in the hearts of the people.

There are so many varieties of apples which have been practically brought to the knowledge of the world by Wisconsin horticulturists, that our fruit in these lines is looked on as a standard with which to make comparison of that grown in other states. Our friends of neighboring states seemed glad that we made so good a showing. The manager of the most complete horticultural exhibit there, that of Ontario, told us that our exhibit joining theirs had been a great incentive to their people to look for better fruit. We had made more work for them, with the result of greatly raising their standard of quality. There were also others who said that the Wisconsin show had waked them up to greater efforts.

Of course we had a good showing of other fruits besides apples. We had grapes in abundance and native plums in great variety and of high quality,—Domesticas more than we had room for,—and plenty of pears, from fair to pretty good. A sod of cranberries in fruit, from Berlin, attracted much attention. It was amusing to hear all the questions asked by people of other states, who have so little conception of Wisconsin's resources. If it is worth anything to Wisconsin to have the world know how good a state we have in which to establish homes, we can scarcely measure the value of our Wisconsin fruit exhibit in promoting the interests of our state. And it has been a great education to ourselves. As the area of fruit planting in the past has broadened out year by year, we now begin to have a faint conception of the future development of apple-growing in Wisconsin. Our Wisconsin State Commission took great interest in our show, and a resolution of thanks is due from the Wisconsin Horticultural Society to Secretary Hambright, Senator Burroughs, and others. While we did not

have as much space as we wished, it was more extensive than appears in the picture. It was shaped like a wedge with the point cut off and space for several persons to be seated in the enclosure.

California joined us on the west, Ontario was a close neighbor to the south, and Nebraska was just east of us across the promenade; north of us was a splendid collection of palms. Ours was a sightly position, and if we lacked space, perhaps that intensified the appearance of abundance in our exhibit, giving an added attraction to the visitors. We were sorry that Minnesota was obliged to accept the cramped-up out-of-the-way corner which would have been ours but for the prompt action of President Loope in securing for us the position he did.

I left our treasurer, L. G. Kellogg, in charge; like the others, his constant thought was to keep Wisconsin "Forward." Secretary Herbst had just arrived, expecting to take up the work from Mr. Kellogg, but his sad bereavement in the death of his father called him home all too soon.

We may naturally ask: Did it pay for the state of Wisconsin through its horticultural society to make this show at Buffalo? I answer, Most assuredly, yes. Nothing could make the members of the society more actively interested for the good of our state than has this working together for our united interests, and the encouraging results will give a lasting impetus to future work for Wisconsin horticulture.

In addition to giving the world an object lesson of Wisconsin's resources, we know more than ever ourselves what a grand state is ours, and thousands who knew but little about Wisconsin's resources now know that among the inducements ours offers as a home state, is the possibility to raise an abundance of apples in Wisconsin. Ours was received as a welcome addition by those who had the care of fruit from other states.

The managers of the exposition were glad we were there. Our Wisconsin state commission was more than satisfied with what we accomplished, and the people of Wisconsin are proud of the fruit exhibit at the Pan-American exposition by the Wisconsin State Horticultural Society.

WILLIAM TOOLE,
Superintendent Pro Tem

October 3d, I received a telegram from Mr. L. G. Kellogg, saying: "Come as quick as you can. Mr. Herbst has been called home by death of his father." I arrived in Buffalo and at the Exposition grounds October 6th, and was introduced by Mr. Kellogg and installed as superintendent. He, Kellogg, had to leave for home the next day.

I found a very attractive show of apples. I had been informed by Dr. Loope the show was good, and it was much better than I had expected to find, as we in Rock county had none; but I found there was a belt through the central part of the state, from Green Bay to La Crosse, that had been favored with rains, making it possible to have so fine a show at the Pan-American; and the fruit forwarded while I was there was fine, with one or two exceptions. One box from Bear Creek, Oconto county, was very fine indeed,—Northwestern Greening and Wolf River. Some fine Wealthy, Fameuse, Scott's Winter, and Longfield were received, and some fine seedlings, from Mr. Zettle of Green Bay.

Plums from A. L. Hatch; some were in good condition when I left, October 21st. Peaches, from Green Bay, and were on the plates when I left. Grapes had gone down, and did not look well. All else was as good as I could wish,—plenty of fresh apples to replace those looking the worse for being on tables three or four weeks, except McMahons, which were not looking as well as fresh ones would have done. There should have been a box of them later to replace to the last, for they were much admired; so many thought they were wax.

My friend B. H. Smith, of Rock county, accompanied me to Buffalo and assisted me the first week at the exposition, for which I was glad, and certainly he deserves the thanks of the society, for he was a host in giving an account of those Wisconsin apples that attracted so much attention. He had some talking to do to convince some they were Wisconsin fruits. I think he generally succeeded. He noted down some of the remarks made October 8th in the afternoon, which I will give you as a sample, for it continued all through my stay.

Remarks: "Fine display; could not be improved upon."
"Why, ain't they wax?" By another, "I never thought Wis-

consin could raise such fruit." Again, "Your apple display is a success." Another, "I am greatly pleased to see your show of apples; I used to live in Wisconsin." Lady, "Why, that is the prettiest lot of fruit I have seen, so clean."

October 9 Mr. Van Duman says, "We are keeping our show up, looks well today."

Mr. Smith continues the jottings of remarks. Gentleman: "This is the nicest compact display of apples here." Lady: "I don't wonder the woman was tempted with apples in the garden of Eden if there were any such as these there." Another remark. Lady: "I never saw anything on earth like it." Lady: "The Wisconsin display is fine, ain't it."

Mrs. Ella Wheeler Wilcox handed me her card and said she was formerly from Wisconsin, which I knew, and was greatly pleased to see so fine a show. Wished she could have some.

Major J. B. Pond, of Lecture Bureau fame, was a caller and also praised our show and talked of old times in Janesville, he having lived here in the early fifties and friend Smith being formerly a printer and worked on the Gazette as did also Pond. His residence is now Everett House, New York city.

Remark by Lady: "From Wisconsin, just think of it, such fruit." Another lady: "Just beautiful! It seems as if they are too perfect to be real. Must be made to order."

These remarks were made in two days with any amount of others.

Some lessons suggested by Wisconsin fruit display at Pan-American. The fruits being new to eastern folks has caused a great interest in the same and I think it will be some benefit to Wisconsin nurserymen as we had frequent inquiries for names of parties who could furnish trees of such varieties as the fruit on tables. We gave the names of most of our prominent growers, both central and south Wisconsin.

One lesson is to stimulate the ambition in our young men to reach a higher point than we have yet attained in propagating new varieties; while we may raise one thousand to fruiting and not get better than Wealthy or Northwestern Greening there are possibilities we have not attained as yet and that I feel sure the younger men of today will accomplish. The older men are rapidly passing. Those who have held on with a determination to

succeed and the show at Buffalo, to those who had the pleasure of seeing it and hearing the praise bestowed on the state from which it came, was most gratifying and I have no doubt will be much benefited by the show made at Buffalo and much credit is due Dr. Loope for securing the location for he had to act promptly or it would have been lost. The space was not large but we could not have had a more eligible situation and ample for the show. All those working members who contributed to the success of it, Parsons, Marshall, Herbst and others, are entitled to the thanks of the society. I left the show in charge of L. F. Laiten.

PAN-AMERICAN EXPOSITION.

By A. L. Hatch, Sturgeon Bay, Wis.

When I arrived at the Pan-American Exposition last August I was very agreeably surprised to find a neat exhibit already installed and in charge of Mr. A. A. Parsons of Eureka. Although made a month earlier than at first contemplated it was very attractive and all the work and material so far arranged for by Pres. Loope and Mr. Parsons was just as it should be and no better place existed for our display than the one secured.

Before leaving Wisconsin I had arranged that fresh fruits be sent on from our part of the State and before I left some of this arrived and with what was sent on from Eureka, Baraboo, Wau-paca and other places enabled us to fill the tables to their capacity and use none but bright, sound fruit. In the extreme heat of that season fruits perished rapidly, and with dust falling constantly over the exhibit, it required constant care to keep the exhibit attractive, Mr. Parsons being very particular that it be kept clean. In this regard it contrasted favorably with most other exhibits.

While with Mr. Parsons we obtained a lot of glass stand dishes that doubled the capacity of the table room and added to the attractive, inviting look of the display. We both concluded, as I had concluded at the World's Fair in Chicago and at Omaha, that the best exhibit would be of fruits alone without

ornamental accessories—such as pictures, plants, flowers, vases, etc. Our fruits are so varied and beautiful in coloring that any attempt to improve their beauty with extraneous ornaments in our judgment detracted greatly from the effectiveness of the display. Upon this point Supt. F. W. Taylor, who was also Superintendent of Horticulture at Omaha, has published the following:

The introduction of elaborate installation, such as polished hard wood, plate glass mirrors and other like methods of distracting the attention rather than centering it upon the fruits or flowers, is the most serious mistake that can be made in preparing to bring before the public anything which is so intrinsically beautiful as a fruit or a flower.

Our exhibit was, on account of its excellence, a surprise to some of the best authorities. Of this matter Supt. Taylor says the following:

Perhaps no one thing more impressed the layman than the fine exhibits in fruits made by Ontario, Nova Scotia, Wisconsin and Nebraska. These provinces and states are so generally believed to be outside the pale of successful fruit culture that their exhibits must have spread abroad a vast amount of education.

In a report of the final meeting of the Wisconsin Commissioners of the Pan-American Exposition as printed in the Milwaukee Sentinel we find the following:

One of the honors which most pleased the commissioners was the award of the much-coveted Wilder medal to the Wisconsin State Horticultural society for the superiority of its exhibit of apples. The medal was offered by the American Pomological society, and was competed for by New York, Ohio and all the other states that particularly pride themselves upon the excellence of the apples that they produce. The Wisconsin apples excelled all others shown at the exposition in beauty, as well as quality, and one of the humorous incidents of the big show was the charge, made by apple-raisers from other sections of the country, that the apples in the Badger state exhibit had been artificially colored.

Special honors were also won by the state on its exhibits of cranberries and plums. The fine position accorded Wisconsin

Mr. W. A. Van Bunt, President of the Commission, further said:

Leaving the exhibit and returning to our own state we feel impelled to say that much credit is due to the work done by Mr. S. H. Marshall of Madison, who urged on the work of fruit collection so efficiently. It was also very fortunate that Messrs. Parsons and Loope, of Eureka, had so much fruit in their young orchards from which such liberal supplies were sent to Buffalo. Among the newer fruits never before exhibited those sent by Mr. Joseph Zettel, of Sturgeon Bay, included a very worthy variety—the Lily apple—a seedling FREE Duchess seedling. We prophesy a bright future for this variety. Of fruits sent to

maintain the display up to the last the apples sent by Mr. E. Wyman, of Casco, and our own plums must have helped very materially as we sent a considerable quantity of fine fruit.

Our success at Buffalo must prove valuable to our own state as an advertisement of its capacities, but it also has the added value of demonstrating to some of our own citizens and public men that the work of our society is not of such a hopeless business as they seemed to think fruit culture is in Wisconsin.

It is also my belief that our methods of collection and exhibiting are right and the most economical that can be devised. As to superintending it, of course, if it can be done, one good man should be employed from start to finish at such expositions but as many of our members be sent as helpers as can be arranged for. This will broaden our work, educate ourselves, increase our acquaintances, bring to our state more of prestige and value than any other plan can. If it can be done let us begin this coming season to save fruit for the St. Louis Exposition, of 1903, with a hope and expectation that we may there win additional honors for our State, our Society and ourselves.

REPORT OF WISCONSIN FRUIT AT THE PAN-AMERICAN.

By A. A. Parsons, Eureka, Wis.

Mr. President, Ladies and Gentlemen of the Wisconsin State Horticultural Society:

In making my report on Wisconsin fruit at the Pan American I shall make it as short and avoid repeating what you have already heard as much as possible. On the first of last August I was notified by our president that I must start for Buffalo Sunday, August 4th, and install Wisconsin's fruit exhibit. It came to me with quite a surprise as until that moment I had not a belief that I should be called upon for that work. But, seeing the necessity for immediate action, I asked where his fruit was for that purpose. His reply was, you ought to know. You have been boasting about your wonderful orchard of four thousand trees. Can't you find a few bushels of fruit for that pur-



HORTICULTURAL BUILDING, PAN-AMERICAN.

pose? Of course that is not quite the fact, as you know. He is the one that has done all the boasting. My reply was, I will go to Buffalo as you wish. But you and other members of this Society must begin to hustle and keep the fruit a coming. We must make an exhibit second to none, one that will be an honor to our state. With this understanding I at once commenced gathering specimens of Yellow Transparent, Duchess, Switzer and Saps of Wine. By Sunday noon I had six bushels of the above varieties packed ready for shipment. In the afternoon our worthy President with his team took us over to Oshkosh, where I took the five o'clock train. I reached Buffalo Monday evening, somewhat weary but quite cheerful for one alone among strangers. Tuesday morning I went to the Exposition grounds. I soon found our space and that our tables were not completed. I at once reported my business there to Prof. Taylor. I next found Prof. Van Deman. He soon made me acquainted with the gentlemen in charge of other state exhibits. Each and all were very friendly. Mr. Hadkson, who had charge of the Nebraska exhibit, and Mr. Van Deman, treated me with the utmost courtesy and at all times were ready to give a helping hand. At the proper time this society should give those gentlemen a vote of thanks for their many kind acts. I soon had our sign up and our desk and chairs on our space thus holding the fort. During the time I was waiting for our tables I had plenty to do, procuring part of those things I thought necessary to make a successful exhibit. What spare time I had I used in following the visitors from one exhibit to another, noting their remarks, also what caught their fancy most and what received but little notice. I got some good ideas. I soon found that to attract the most of their attention one must have something besides fine fruit. Working from those ideas, and some others, I gradually, with the help of others, built up our exhibit to what I believe quite a high standard both as to quality and attractiveness.

Thanks from this society, as well as myself, are due Mr. Hatch for his help and encouragement while he was with me. None from this society or from our state had more interest or pride in our exhibit than Senator Burrows and Mr. Hambride, of the State Commission. At all times they encouraged me to

greater effort. At the time comrade Abbot came I was very much in need of help as I had quite an amount of fruit to sort, grade and enter and my correspondence was badly neglected. As soon as he looked over our exhibit and got the necessary enthusiasm he went to work like a good veteran and we soon had things in better order. Unfortunately for all his stay was short, being called away by the loss of his home by fire.

No one variety attracted more notice than our noted cranberry bog. It was a source of wonder to many. At the time I received it I thought I alone had earned it as I had written several letters to members of this society for something of this sort. When our president told me how he had driven eight long miles for this same bog, lugged it in a grip such a long distance in coming to Buffalo, I changed my mind, and now believe to him alone should be given all the glory. Through the encouragement of Senator Burrows one of my last acts there was to mount this bog in as attractive a manner as possible. At this time the attendance at the Exposition grounds had increased many thousands daily. I had talked and answered questions until I was nearly speechless. At about this time Prof. Goff, President Loope, friends Geo. J. Kellogg, William Toole, my wife and several other friends from my home village came. I cannot forget my feelings of pride and pleasure over the words of praise our exhibit received from them and of seeing those friends from home, as I knew my hour of relief from the many cares had come.

I soon had our President installed as chief talker. I left him with all the glory and started out for the first time on a tour of inspection. I purposely stayed away for two long hours. When I came back Mr. President was bravely trying to explain to a large audience how it was that Wisconsin apples had such a glossy appearance. His first words to me were: "Oh, it's great." Friends Kellogg and Toole soon took charge of the exhibit, with all the enthusiasm and, as I believe, determined to carry it to a higher standard if possible.

It would be impossible for me, at this time, to measure the value or benefits Wisconsin derives from this exhibit. I can see some of them. It has proved beyond a doubt to our eastern

and southern brothers Wisconsin's possibilities in this line of products.

They begin to realize that Wisconsin is and will be in the future a strong competitor in the world's market for apples. It has attracted the notice of many wholesale buyers from abroad. That means a larger market. This alone, to Wisconsin growers, will be worth many times the cost of their exhibit. Not all of our honors and benefits come from abroad. The press and many prominent persons in our own state have given us words of praise. Through them our success has been brought to the notice of the great commonwealth of Wisconsin as never before. This also will be of immeasurable value to us in similar work along this line. The last act of our State Commissioners for our benefit proves the above statement.

Besides all this the growers of Wisconsin have received that encouragement toward better cultivation, greater efforts to produce more bushels and varieties better adapted to our climate. As to the quality of our fruit this list from the Bureau of Awards speaks stronger than anything I can say. (Reads list.)

Mr. President and Gentlemen, this list is very gratifying to me. Not from any personal award but from the fact that it proves beyond a doubt that each of us who had charge of our exhibit tried to do his duty to all who shipped us fruit and for the best good of the Wisconsin State Horticultural Society.

Mr. President, Ladies and Gentlemen: As to that fatal Friday when our beloved President, William McKinley, was foully assassinated, I am not capable of saying much. I heard the fatal shots that killed him. In a moment I knew what had happened. You can hardly imagine the change that came over that vast assemblage of people. No exhibit of whatsoever kind received the slightest notice. It carried me back in memory to a day, in 1865, when the news came to my regiment that Abraham Lincoln, that saint among men, was in a like manner destroyed. I cannot find words suitable to express my feelings of sorrow in common with others. Strong men, women and children freely mingled their tears of sorrow with each other. A brave comrade, a kind President; his death is mourned by all.

The President: I see that we have with us Senator Burrows of Madison, and I would like to have a few words from him.

Senator Burrows: Mr. President and Ladies and Gentlemen: Way down east in Vermont, among the green hills and mountains of that state, the old homestead of the Burrows family still stands. We have had that old place for 125 years, and we propose to keep it as long as trees grow upward and water runs down hill. But what I am getting at is this,—a short time ago I visited my old home and there was the old orchard of 500 trees which my grandfather, an old revolutionary soldier, planted there immediately after we became a government of our own. Out of the 500 trees there are not today 25 that are dead; they are bearing today, and they had this fall an average of ten bushels to the tree. Sixty years ago my father began grafting in that orchard; up to that time I do not think grafting was known in New England, so that today we are raising there all the fruit almost that your President and other fruit growers are raising in Wisconsin.

There are Baldwin apples there, Rosenberry Russets, and other varieties, and I might say that all those varieties grow there in that easy way, without any care, because it is a natural fruit country; and what I say of Vermont is true of New York and the other New England states, and of Canada, which borders on Lake Ontario. Consequently, when this society came to our commission, I having the honor to be one of the members of that commission appointed by Governor Scofield, we said it would be like carrying coals to Newcastle, the idea of Wisconsin wanting to make an exhibit of fruit down at Buffalo, right in the very heart of the greatest fruit growing country on the globe. But I remember well when the fruit from Wisconsin first arrived there, and I remember well the first visit I made there after it was set up, and, great heavens! there was nothing in that great building that would compare with it; and I do not say it because I am a Wisconsin man, or to please you,—it was an absolute fact that there was not a state in this Union that had so good a showing of fruit as Wisconsin. (Applause.)

- Ft. Atkinson, Wis., Feb. 4, 1902.

Members of the Wisconsin Horticultural Society:—Your delegate to the State Horticultural Society held at Champaign, Ill., December 10, 11 and 12, was well treated. They resemble the Wisconsin horticulturists in looks and actions, and seem very friendly to our society and professors at Madison, Wisconsin. Their attendance ranged from 50 to 75 most of the sessions, perhaps 100. I did not get to the meeting till the evening of the 10th, so I cannot give a report of the first day's program.

Contrasting and comparing Wisconsin and Illinois we will find their conditions and ours very different. Illinois is 400 miles long from north to south. Conditions in northern Illinois are much like Rock prairie and other prairies in southern Wisconsin, and is a poor apple country for a commercial crop. But southern Illinois was a great apple producing country last season. Thousands of acres of apple orchards were in full bearing. In looking over the fruit exhibit I saw but very few sorts we grow in Wisconsin. Their leading sorts are Ben Davis, Jonathan, Grimes' Golden, Missouri Pippin, and apples of kindred hardiness. The planters, certainly in the south part of the state, use one-half Ben Davis, but at the present time the planters are putting out more Jonathan and Grimes' Golden.

Wisconsin and Minnesota seedlings were not upon their tables. Many locations in Wisconsin are far better apple growing sections than northern Illinois, and some of the north Illinois men acknowledge this. Illinois made me think of Iowa as the north half of each state plants far different sorts than does the south half. I met friends Hartwell of Dixon, Augustine of Normal, Bryant of Princeton, and the delegate from Iowa, Mr. Coleman, and they all wanted to be kindly remembered to their Wisconsin friends. In justice to the Wisconsin exhibit at the Buffalo Exposition, Mr. Hartwell said it was as good an exhibit as there was there. This report reaches me from many sources, and something somewhere is due to excellent management.

The state meeting was held in Morrow's Hall of Agricultural building. R. Morrill of Benton Harbor, Mich., spoke on the "Weak places in orchard management." First, get an orchard

started right—straight lines make easy culture; advocated short bodies, and as a consequence, in pruning and picking there was a saving of from 10 to 20 per cent. in hired labor; better care of orchards by cultivation; latter part of winter used for pruning, prune so that the tops will lean slightly toward the windward side. Whitewashing the trees aids in repelling the rays of the sun, making the buds start later in the spring. Best method of thinning fruit, by pruning; did not favor weed crop or any crop to mature in the orchard, but cultivates late enough so the wood matures, and then sows oats,—barely enough for protecting trees for winter. Mr. Morrill is an extensive grower and has recently formed a company and purchased 9,000 acres in Texas, and they planted 500 acres to peaches the coming spring. His ideas were well received by the convention.

Wednesday afternoon, Dr. W. K. Jacques of Chicago gave a paper on "Preparation of orchard soils"; said an intelligent fruit grower was a successful one,—man was just as dependent upon the proper food as the tree is upon the soil; it is just as possible to ruin the digestive organs of a tree as of a person. Nothing so affects the success of a fruit tree as the lack of water, as water to a tree is as blood to the person. Government at Washington advises subsoiling to subserve moisture.

E. A. Riel of Alton gave a paper on "Grape culture for the farmer"; said easiest fruit crop grown, can grow them successfully upon any uplands; grape vines try to produce too much, so cut back; fair crop 5 to 20 pounds per hill, and bunches average one-half pound; pruning done in the fall; stakes 15 to 20 feet apart, and wire used on same as a trellis; one-year vines preferred to two-year to plant.

Wednesday afternoon after the session, the convention was invited to look the educational buildings over, which invitation we accepted. The buildings are more substantial than ornamental, and instruction in all the departments is carried on in a practical way in shops and laboratories. The buildings are as follows: Agricultural building, Engineering hall, Literature and Arts, Natural History, Observatory, Electrical, Machine hall, Armory, Testing laboratory, Wood shop, Gymnasium, and Library building. Many comments could be made

upon these but space does not allow. One thing, however, that hangs in the Library, is an oxbow made by Abraham Lincoln.

Wednesday evening, Mrs. Sada Blair (wife of Prof. Blair) gave a paper, "Fruit in its relation to health." Fruit is not injurious to health if used judiciously. "An apple a day keeps the doctor away." Many citations were given where people attribute their good health to eating fruit freely. Apples cost ten times as much as flour, and are of incalculable intestinal value. "Eating an apple just before going to bed is like knocking the doctor upon the head." Numerous quotations given by leading physicians on apple eating. Apples are the king of all fruits; eating bananas was indorsed, as their food values are very great; all traveling men advised to call for good apples upon the tables at hotels, in this way creating a greater demand for this fruit and improving the health of this numerous body of citizens. I was so interested in this paper I failed to get all the cream of this paper, and I wish every person in Wisconsin could read it in full.

Dr. T. J. Burrell gave a paper on "Bitter rot" (which is different from black rot). Illinois gave \$10,000 to the investigation of this disease, and so you see it is of great interest to the state, as it destroys a great deal of fruit in southern Illinois. But the spore does not live in northern Illinois, and in no way affects Wisconsin.

The session Thursday morning was election of officers, and H. M. Dunlap of Savoy was elected president, H. A. Aldrich of Neoga, vice president; L. R. Bryant, of Princeton, secretary, and J. W. Stanton of Richview, treasurer.

Thursday morning, after election of officers, Arthur Bryant gave a paper on "Plums; variety and culture;" said their worst enemy was the culculio; Prof. Goff was quoted as advocating more pruning of American sorts to get better results; mulch not desirable unless continued each year, but constant cultivation recommended; native sorts only recommended,—De Soto, Wyant, Hawkeye, Wolf, and Milton. The consensus of opinion was that rot was the great trouble in plum culture in southern Illinois, and that three years of constant spraying with Bordeaux mixture did away with rot very largely.

Thursday afternoon, A. P. Darby of Ramsey had a paper

on "Cow peas as an orchard fertilizer and field crop." He had ten acres of orchard and he planted five acres into potatoes and five acres into cow peas; the results were: that portion planted to cow peas the trees were green and fresh all summer and the apples sold for fifty cents per bushel more than the five acres planted to potatoes. Cow peas were planted June 1st and harvested September 1st, and for seed used one bushel per acre. Many members of the convention advocated the planting of cow peas and turning in hogs and lambs to live upon the crop, in this way leaving all the fertility in the orchard from the crop. Whip-poor-will sort used by most of the growers.

II. T. Thompson, of Marengo, northern Illinois, gave a paper on the "Best methods of propagating trees for the orchard;" said select seed from hardy sorts of apple, condemning the importation of French seedlings to work upon. Same conditions seem to prevail in northern Illinois as in Wisconsin (root killing); short roots and long scions advocated by Augustine, of Normal. George J. Foster, of Normal, Illinois, reported from that station that Vermont Beauty gave a nice crop and good quality of fruit; also Milton plum gave good crop of good quality, and very early.

Prof. Forbes, state entomologist of Illinois, took up the subject, "Canker worm and other insects, including the San José scale." Canker worms live three or four weeks and do great damage in different sections; for two years at Jacksonville the elms have been defoliated; same report at Decatur. One thorough spraying destroys the canker worm. Its parent is the moth; the female has no wings, the male has. Some sticky substance ought to be used around the base of the tree, so that they cannot climb the tree. Various insects were discussed. Cost of inspecting nurseries in Illinois on an average, \$3.70 last year. There are six spraying parties operating in Illinois against San José scale at the present time. Ingredients used in fighting the San José scale: For apple 20 per cent. kerosene (bright days), whale oil (dark days), lime, salt and sulphur, used for destroying the scale; 50 pounds lime, 50 pounds sulphur boiled one hour in 75 gallons water; add 40 pounds salt, making the amount 150 gallons in all by adding

water. Prof. Forbes spoke of the crown gall, and said it was a troublesome thing to many of the fruitgrowers; could not give a sure remedy without destroying the tree.

Respectfully submitted,

F. C. EDWARDS,
Delegate.

REPORT OF DELEGATE TO N. E. IOWA HORTICULTURAL SOCIETY CONVENTION, HELD AT ROCKFORD, IOWA, ON DECEMBER 16, 17, 1901.

Your delegate begs to report as follows: Left home on morning of the 15th, with the mercury at 25 below zero. Trains all late, and getting later all the way out; very tedious and slow traveling; made poor and inconvenient connections. Arrived at Rockford (a pretty little town of about 1,800 inhabitants on Rock river in Shelby county) at 10 o'clock on the 16th.

Convention assembled at vestry in the Baptist church, with no officers present except the secretary. No meeting called in forenoon, owing to short attendance of members. Meeting called to order at 2:30 P. M. by President Elmer Reeves, with not to exceed twenty persons in attendance, owing to the exceedingly cold and disagreeable weather. The fruit exhibit was very small, consisting of 21 plates only of mostly inferior apples, owing to the fact that this was the off year and a disastrous and dry season, and presumably, to the fact of its coming in such a discouraging storm. One very fine plate of Patton's Greening, and one plate of the Arctic apple were shown by local members. This new acquisition (the Arctic apple) I am delighted to say, seems to contain about all the good qualities that one could expect in one apple, namely: quality, size, color, flavor, texture, symmetrical appearance, and keeping qualities. These specimens were raised by Mr. Ivans of Iowa Falls, who claims it to be a vigorous, hardy, productive tree; and it is my intention to, and desire that we secure and test trees of this new variety. These sample apples were cut and sampled by the members present, all agreeing that the apple is par excellence,

Minnesota showed a few plates of fair apples, including of course in its collection, Wealthy and Patton's Greening. Wisconsin of course showed but a few plates of splendid McMahan, Wolf River, Northwestern Greening and Pewaukee. I am delighted to report to you that what this society lacked in members, it made up in earnest and diligent efforts to make the convention a grand success and a benefit.

All the apples displayed at this convention, and all the papers and discussions along this line, seemed to confirm the prevailing idea of the local adaptation to most varieties was the key note of success in appleculture. One member showed some fine specimens of carefully dried, or rather evaporated, apples, which to me was a very fine object lesson and one that should be encouraged by our society. A collection of native nuts was also displayed, and the secretary showed a fine collection of choice woods finished in oil and showing their natural grain and texture.

Reports from various sections showed a very poor crop of strawberries and other small fruits, with a fine crop of cherries, while plums rotted badly, and it was a decidedly off year for apples. The Lombard was accredited as the best of all the European varieties, and not a friend or a petition from anyone for any of the Japan varieties. But all seemed to laud their praises for our native varieties, such as Wyant, De Soto, Rockford (which originated in the village), Mann, Forest Garden, etc.

A synopsis of all reports from that section of Iowa, and a vote of the members present, showed Plumb's Cider to be the best and hardiest all-around apple tree growing in northeastern Iowa. This of course was very gratifying to your delegate, and suggests that we ought to pay more attention ourselves to this valuable variety. The Wealthy and Duchess had lots of friends, and Wolf River, Haas, and McMahan as close competitors, and of course Patton's Greening had its share of attention and praises for hardiness and quality. To me it appeared to be at home in Iowa.

No new or seedling varieties were shown or discussed at all, which is convincing that they are in a great measure depend-

ing on Wisconsin and Minnesota to produce the needed new varieties.

The novel and surely practical suggestion of planting Russian mulberry trees in close proximity to the cherry orchard for the purpose of diverting the ravages of the birds from the ripe cherries was very practically discussed, and will be heartily recommended by your delegate.

Mr. Guilford of Dubuque reported a great success in growing Kieffer pears grafted on Whitney No. 20 stalks, and from Mr. Guilford's earnest convictions I am inclined to think well of the suggestion. The grape is a great success in Iowa, with Campbell's Early at the head of the list, with Worden, Moore's Early, as market sorts, and Delaware as best dessert sort.

It is my opinion that Iowa is not the most ideal apple state of our Union, yet its possibilities for producing fine stock of all kinds to me seems to be unsurpassed, and as an agricultural state cannot be excelled.

Am pleased to say your delegate was royally entertained by a family of Lyons, and we found everyone very cordial, earnest and sincere, their hearts, like their forms, too large for their own good.

May our associations continue, and may we be imbued with a spirit akin to their great hearts, and they, in return, a spirit of our everlasting perseverance and ambition in the pursuit of new seedlings and horticultural achievements. We shall always remember the kind acquaintances we made here and hope that we may be found with many of their earnest workers in our cause in return.

Thanking the society for the honor conferred, your delegate respectfully submits this report.

A. D. BARNES.

REPORT OF J. L. HERBST, DELEGATE TO MINNESOTA STATE HORTICULTURAL MEETING.

The Thirty-fifth Annual Meeting of the Minnesota State Horticultural Society was held in the lecture rooms of the Plymouth church, Minneapolis, December 3d, 4th, 5th, and 6th, 1901. It was very instructive and interesting to all who attended. The attendance was very large, and lively discussions followed each subject presented. The program was well balanced as to the various topics pertaining to horticulture. Owing to the pressure of correspondence in regard to our own program, I was unable to attend throughout the entire session. The different states represented were: North Dakota, South Dakota, Iowa, Wisconsin, and Vermont.

There was a large display of apples, including quite an exhibit of cold storage fruit. Some splendid specimens of Wealthy and Northwestern Greening, quite a number of seedlings, were in competition for \$1,000.00 prize, but failed to secure it. Mr. Philips showed a very fine seedling; also some splendid specimens of Northwestern Greening.

After I had left, the subject of "Picking and Packing of Apples" was brought out, and I was sorry I was not there to defend Wisconsin. I have been unable to find out who the Wisconsin man was who told that in Wisconsin the growers select the choicest fruit and place on the top and bottom of the package and the inferior fruit on the inside. I am sure it wasn't Mr. Philips, and as I was not there when this subject was discussed, I am not guilty of the offense.

I have often wondered what the attraction was at the Minnesota meetings that was such a drawing card to our members, but after attending, I have found out. In the first place, their attendance is large. Next, they have lively discussions on each and every topic brought up. Everybody is ready to discuss the topic when the one who presented it is through. The President holds them to the subject, and finally they bring on the dessert, which consists of a big banquet with lots of good

things to eat, and a general good story telling to wind up on. A full report of this meeting will be given in the Horticulturist.

J. L. HERBST,

Secretary.

Mr. Converse: My report was published in the Horticulturist, but there are one or two things that I might mention that Iowa has that I wish Wisconsin might have. In Iowa the society has a home of its own, had a good room on the main floor; anybody going into the capitol can readily find the office of the Horticultural society; and in that is a fine collection of the apples of Iowa in wax, a fine collection of wood, and also a good nucleus of a library; and here in Wisconsin, where I think the horticultural interests are just as strong as they are in Iowa, we are shifted around from pillar to post in the building; we have no permanent home. There they hold open house the year around, and I would like to see the Wisconsin society come to that same point, to have a permanent home, and have the secretary there, or some representative of the society the year around, where people can go and get any information desired.

The president then introduced to the society Professor Henry of Madison university.

Prof. Henry: I come to you with something that I believe will interest nearly all of you, as it has deeply interested myself. The subject of forestry is one that has long been on my mind, I have thought about it again and again as I traveled through the northern part of the state, but I have never seen a way of getting at the thing practically until at this time; and I come to you for your support of a measure which I will place before you. To go back: some years ago Edward S. Morrill introduced a bill into congress to provide that out of the sales of land the United States government should give some money to the different states for agricultural and horticultural colleges. Later he introduced a second measure which gave still more land, and our agricultural and horticultural colleges are maintained largely out of those funds at government expense. In 1887 Mr. Hatch, of Missouri, introduced a bill

to give \$15,000 to each state for an experiment station, and we have that fund at the university now. Now, for the fourth time, comes the government with a proposition to give some more money; a bill introduced by Congressman Grosvenor, of Ohio, provides that there shall be given to each state in the Union \$10,000 the first year, to provide for a school of mining, but also to include instruction in road-making, forestry and engineering; the second year that shall amount to \$11,000, and I think it reaches the sum of \$20,000 a year, at which sum it shall continue. Now, if that bill were to pass, the legislature could have it to give to the university, the university would have to start a school of mining. Now, I wish to forestall any division of this money, and I wish that the college of agriculture of the state should get two-fifths—we got two-fifths under the last Morrill act—and I should like to get the same percentage of this coming act; that would give us the first year, \$4,000, and gradually it would increase until we got \$8,000. Now, I wish that the legislature should direct the regents to spend two-fifths of that money for forestry, let alone irrigation or road-making. Then, at the same time, have a commission appointed which shall go over and view the different state properties, all our lands in the north, and set aside those that are proper for agriculture, to be used for farms, to hold all the others that are not fit for farms as state property and turn it over to the university, deed it to the university to be held in trust for the state, or hold it as state property; and then to acquire, by gift or purchase from the government, if possible, all other poor lands in the state to be held as a forest reserve for the state of Wisconsin, to be administered and watched over by this \$8,000 a year that the general government gives to the people. Now, I think you will agree with me that that is a pretty reasonable proposition, and I wish to offer the following resolution and move its adoption.

WHEREAS, Forestry is a subject of great importance to this commonwealth though it has received no recognition in the past, and whereas there is now pending in Congress a bill known as H. R. 8735 which provides from the proceeds of the sales of

public lands funds by which the agricultural and mechanical colleges can, among other branches, give instruction in forestry,

Resolved, That the Wisconsin State Horticultural Society most earnestly approves of said bill and urges its hearty support by our congressional representatives at Washington.

Resolved, That the Secretary of this society be instructed to at once transmit certified copies of these resolutions to each of our senators and representatives at Washington.

Reports of Secretary and Treasurer were here read and referred to Finance committee.

SECRETARY'S REPORT.

The year just passed will be one long remembered by the members of our state society, and why? Because events have happened that will leave impressions on us. The record shown at the Pan-American has placed our society as one of the leading horticultural societies in the United States. We are at last beginning to be known not only to the people of our own state, but to many others. Little did the state commission think of us when they were approached by our committee and asked for an appropriation. They took us for grafters; but their minds have changed and we stand foremost of those who helped to make the creditable showing Wisconsin did, and carry away the honors. Each and every one of those who were willing to lend the helping hand in making our exhibit, is entitled to some praise for his services rendered.

Our reports are being sought by the leading agricultural and horticultural colleges of the Union. Back numbers are being asked for, which I am unable to furnish. By sending delegates to other states, we are kept in touch with them. This winter we have sent to Michigan, Illinois, Iowa and Minnesota, and they in turn have sent delegates to our meeting. We also sent delegates to the Pomological Society.

I have aimed to have papers presented at this meeting which will not benefit only a few, but all. The persons who have prepared these papers are well versed in the various topics, and speak from actual experience.

Our membership is steadily increasing, and while we cannot come up to our neighbor state Minnesota, we hope to ere long. We have about 160 members. Stop and think, if each member would get five new members, the coming year we would have 800. I have marked in the map here where our members are located. The round red dot shows the cities and towns in which the member lives. Those encircled with the blue, are places from which fruit was sent to Buffalo. Those encircled with the green are where awards were made. You will notice that most of our members are located in the southern and eastern part of the state, with a few in the western. A section of our state which needs some work to be done to it is the northwestern section. I understand there is considerable fruit grown in this section, and yet but two members are from this section. If another experimental orchard is established, I would advocate the location of it in this section of the state. Our two trial orchards at Wausau and Eagle River are both in the best of condition, and the one at Wausau will soon yield some returns.

I strongly advocate closer relationship with our local societies. I am sure if the local societies will do their share, the state society will do theirs. As it is now, the state society pays the expenses of a delegate to one of our state meetings if the local society will pay to one. I am at a loss to know just how many local societies we have, and in what standing they are. These local societies should be made to report to the secretary of the state society twice a year, giving their list of officers, total membership, and meetings held during the year. The secretary is supposed to send the local societies a number of bound copies of our Annual Report, but how does he know to whom they shall be sent?—and yet the secretary is blamed if they do not receive them.

Within the past year two of our members have departed from us: Mr. Hoxie and Mr. Innis, both prominent and true horticulturists. Our sister state Minnesota mourns the loss of another prominent horticulturist, J. L. Harris, also an honorary life member of our society. I shall not dwell on the lives of these members, as we have a special session for this occasion.

Our library is in about the same condition it has been for the past number of years. The committee appointed to wait on the governor and see what could be done in regard to room for our books, failed to get any satisfaction; and perhaps if the committee would wait on the present governor we might perhaps be more successful. Now is the time to ask, as our record at the Pan-American might have some influence in securing suitable room for our library.

Respectfully submitted,

J. L. HERBST,

Secretary.

Secretary's Report from June 22, 1901, to February 1, 1902.

Postage	\$30 03
Express and freight	32 38
Miscellaneous	88 66
Printing and stationery	41 75
Secretary's salary ...	300 00
Total	<u>\$492 82</u>
Received on expense	\$192 82
Secretary's salary	300 00
Total	<u>\$492 82</u>

REPORT OF FINANCIAL COMMITTEE.

To Wisconsin State Horticultural Society, Mr. President and Members:

Your committee have examined the reports and books of the Secretary and Treasurer, and are pleased to report same as correct.

Respectfully submitted,

IRVING C. SMITH,

L. F. LAITEN,

Committee.

TREASURER'S REPORT.

L. G. KELLOGG, Treasurer, in Account with Wisconsin State Horticultural Society.

Receipts.

1901.

Jan. 17.	Received of R. J. Coe, former treasurer	\$185 12
	Received of J. L. Herbst, memberships	38 00
26.	Received of J. L. Herbst, memberships	3 50
Feb. 15.	Received of State Treasurer	750 00
May 28.	Received of State Treasurer	1,125 00
June 6.	Received of J. L. Herbst, memberships	2 00
Sept. 5.	Received of A. L. Hatch, cash returned	21 24
	11. Received of J. L. Herbst, membership fees	4 00
	20. Received of Wis. Pan-American Commission	500 00
Oct. 3.	Received of J. L. Herbst, cash returned	17 32
Nov. 10.	Received of J. L. Herbst, membership	1 00
Dec. 4.	Received of German Nat. Bank, 60 days' loan	300 00
	15. Received of Geo. C. Hill, membership	1 00
	23. Wis. Pan-American Commission	261 48
	31. Received of A. D. Barnes, overpaid	50

1902.

Feb. 4.	Received of J. L. Herbst, memberships	38 50
Total		\$3,248 66
Total amount paid out		\$3,303 20
Balance due treasurer		54 54
		<hr/> \$3,303 20

Disbursements.

Order No.

1	Barnes, A. D., expenses, winter meeting	\$2 36
2	Hoxie, B. S., expenses, winter meeting	7 40
3	Kellogg, Geo. J., expenses, winter meeting	5 32
4	Meenk, J., expenses, winter meeting	2 08
5	Jacobson, Emma, expenses, winter meeting	9 94
6	Carey, Mrs. J. B., expenses, winter meeting	88
7	Edwards, A. J., expenses, winter meeting	5 00
8	Green, E. C., Ill. delegate, winter meeting	30 35
9	Floyd, H., premiums, winter meeting	2 25
10	Barnes, A. D., premiums, winter meeting	3 25
11	Smith, Irving, expenses, winter meeting	2 95
12	Baldwin, M. R., expenses, winter meeting	2 36
13	Nye, Edw., prem., winter meeting	1 50
14	Kellogg, Geo. J., prem., winter meeting	75
15	Converse, D. C., expenses as treasurer	3 33

WINTER MEETING.

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16	Hatch, A. L., expenses, winter meeting	7 10
17	Kellogg, Geo. J., prem. and prize essay	9 00
18	Tarrant, H., expenses, winter meeting	6 00
18	Jewett, Marian, expenses, winter meeting	10 25
19	Rogers, Fred, expenses, winter meeting	2 25
20	Trelevar, Mrs. Jas., expenses, winter meeting	3 00
21	Barnes, A. D., premiums and prize essay	3 00
22	Edwards, F. C., expenses, winter meeting	5 00
23	Marshall, A. S., expenses, winter meeting	6 88
24	Toole, Wm., expenses, winter meeting	8 32
25	Englebright, W. H., board for delegates	134 55
26	Taft, L. R., Mich. delegate, expense acct.	24 67
27	Chappel, F. H., expenses, winter meeting	6 72
28	Johnson, Mrs. F., expenses, winter meeting	14 92
29	Goff, E. S., expenses, winter meeting	4 57
30	Tong, Geo., expenses and prize essay	2 00
31	Philipson, C., prize essay	2 00
32	Carpenter, T. A., prem., winter meeting	3 00
33	Snyder, Geo. W., prem., winter meeting	1 50
34	Tarrant, H., premiums, winter meeting	3 00
35	Tuttle, A. C., premiums, winter meeting	50
36	Christensen, N. S., premiums, winter meeting	25
37	Chappel, F. H., premiums, winter meeting	3 50
38	Nelson, John, premiums, winter meeting	25
39	Parsons & Loope, premiums, winter meeting	13 50
40	Roe, J. W., premiums, winter meeting	7 75
41	Kemeys Fynte, Mrs. E. W., premiums, winter meeting..	50
42	Morris, M. J., premiums, winter meeting	1 50
43	Babcock, O. W., premiums, winter meeting	75
44	Ellis, H., premiums, winter meeting	50
45	Herbst, J. L., 1st quar., salary	75 00
46	Kellogg, L. G., expenses, delegate to Baraboo.....	13 92
47	Foley, M. F., exp., winter meeting	8 32
48	Jacobson, Miss Emma, reporting winter meeting.....	51 50
49	Baraboo Republic, printing Horticulturist.....	85 50
50	Herbst, J. L., office exp. account	30 70
51	Kellogg, L. G., trees for Eagle River Station	9 25
52	Kellogg, L. G., labor and trees, Wausau Station	29 50
53	Kellogg, L. G., trees and labor, Eagle River Station....	68 06
54	Herbst, J. L., expense acct., Eagle River.....	24 17
55	Herbst, J. L., salary, supt. Wausau Station	25 00
56	Abbott, C. A., exp., executive com. meeting	8 31
57	Edwards, F. C., executive com. meeting	2 27
58	Riordan, D. E., freight paid	3 76
59	Loope, T. E., expenses, Madison and Milwaukee	15 00
60	Loope, T. E., expenses, executive com. meeting	8 67

61	Parsons, A. A., expenses, executive com. meeting	7 00
62	Tarrant, H., expenses, executive com. meeting.....	3 13
63	Toole, Wm., expenses, executive com. meeting.....	2 97
64	Kreutzer, A. L., labor and rent	77 00
65	Herbst, J. L., 2d quarter, salary	75 00
66	Kellogg, L. G., exp. acct., Madison	6 93
67	Baraboo Republic, printing contract	82 50
68	Loope, T. E., cash, Pan-American exhibit	250 00
69	Kreutzer, A. L., labor on trial orchard	42 45
70	Hatch, A. L., exp. acct., Pan-American exhibit	106 55
71	Menn, J. J., exp. acct., summer meeting	5 70
72	Toole, Wm., exp. acct., summer meeting	2 22
73	Bushnell, Mrs. C. E., exp. acct., summer meeting	7 16
74	Barnes, Mrs. A. D., exp. acct., summer meeting	8 80
75	Trelehan, Mrs. Jos., exp. acct., summer meeting	6 60
76	Edwards, F. C., exp. acct., summer meeting	2 27
77	Christenson, H. C., exp. acct., summer meeting	6 10
78	Johnson, Mrs. F., one quar., salary	50 00
79	Morris, M. J., exp., summer meeting	6 10
80	Halkney, A., exp., summer meeting	5 70
81	Hanchett, Will, exp., summer meeting	6 48
82	Abbott, C. A., exp., summer meeting	7 16
83	Huppler, W. H., board of delegates	41 35
84	Herbst, J. L., exp., secretary's office	32 75
85	Loope, T. E., exp., Pan-American exhibit	75 97
86	Loope, T. E., exp., summer meeting	7 00
87	Hatch, A. L., fruit for Pan-Am.	11 50
88	Jeffrey, Geo., fruit for Pan-Am.	4 50
89	Barnes, A. D., fruit for Pan-Am.	5 32
90	Toole, Wm., fruit for Pan-Am.	12 65
91	Barnes, A. D., fruit for Pan-Am.	4 17
92	Herbst, J. L., premiums, summer meeting	1 00
93	Hetherington, R. H., premiums, summer meeting	2 00
94	Sheldon, E. T., premiums, summer meeting	1 00
95	Toole, Wm., premiums, summer meeting	5 50
96	Hirschinger, C., premiums, summer meeting	1 00
97	Drake, W. H., premiums, summer meeting	2 00
98	Wannamaker, Mrs. C. H., premiums, summer meeting..	1 00
99	Christensen, H. C.	50
100	Morris, M. J., premiums, summer meeting	50
101	Barnes, Mrs. A. D., premiums, summer meeting	1 50
102	Ihrig, J. J., fruit and collecting for Pan-Am.	4 90
103	Jeffrey, Geo., fruit and collecting for Pan-Am.	7 00
104	Jeffrey, Geo., fruit and collecting for Pan-Am.	5 40
105	Barnes, A. D., fruit and collecting for Pan-Am.	5 07
106	McGowan, H. B., plates for exhibit.....	2 25

WINTER MEETING.

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107	Bingham, D. E., fruit, Pan-Am.	12 90
108	Jeffrey, Geo., fruit, Pan-Am.	5 65
109	Parsons, A. A., cash, Pan-Am.	50 00
110	Toole, Wm., cash, Pan-Am.	50 00
111	Barnes, A. D., fruit, Pan-Am.	6 77
112	Parsons, cash, Pan-Am.	50 00
113	Herbst, cash, Pan-Am.	50 00
114	Goff, E. S., delegate, Am. Pomological Society	24 70
115	Toole, Wm., cash, Pan-Am.	50 00
116	Jacobson, Miss Emma, reporting summer meeting	27 84
117	Ihrig, J. J., fruit, Pan-Am.	9 15
118	Stackman, Ed., fruit, Pan-Am.	75
119	Bingham, D. E., fruit, Pan-Am.	3 00
120	Marshall, S. H., fruit, Pan-Am.	2 50
121	Barnes, A. D., fruit, Pan-Am.	4 85
122	Jeffrey, Geo., fruit, Pan-Am.	13 95
123	Phillips, A. J., premium, State Fair	25 00
124	Fox, Wm., premium, State Fair	10 00
125	Ramsey, Mrs. Robt., premium, State Fair	15 00
126	Parsons, A. A., cash, Pan-Am.	44 28
127	Bingham, D. E., fruit, Pan-Am.	16 50
128	Kellogg, L. G., cash, Pan-Am.	62 84
129	Kellogg, L. G., exp. acct.	9 98
130	Baraboo Republic, printing contract	82 50
131	Johnson, Mrs. F., salary	50 00
132	Tarrant, H., exp. acct., Pan-Am.	59 61
133	Bingham, D. E., fruit, Pan-Am.	6 00
134	Hatch, A. L., fruit, Pan-Am.	3 00
135	Menn, J. J., fruit, Pan-Am.	8 70
136	Hazen, W. S., fruit, Pan-Am.	4 00
137	Kellogg, L. G., fruit, Pan-Am.	4 00
138	Hatch, C. A., fruit, Pan-Am.	7 50
139	Hanchett & Son, fruit, Pan-Am.	2 00
140	Jeffrey, Geo., fruit, Pan-Am.	7 00
141	Ihrig, J. J., fruit, Pan-Am.	10 95
142	Toole, Wm., fruit, Pan-Am.	17 50
143	Fox, Wm., fruit, Pan-Am.	23 75
144	Barnes, A. D., fruit, Pan-Am.	2 37
145	Loope, T. E., cash, Pan-Am.	125 00
146	Herbst, J. L., 3rd quar., salary	75 00
147	Loope, T. E., exp. acct., Madison	12 50
148	Edwards, F. C., delegate to Ill.	15 73
149	Converse, D. C., delegate to Iowa	22 88
150	Bingham, D. E., fruit to Pan-Am.	12 65
151	Herbst, J. L., exp. acct., Madison and return	20 83
152	Barnes, A. D., delegate to N. E. Iowa	28 69

153	Marshall, S. H., exp. acct., corresponding sec. office.....	13 13
154	Kreutzer, A. L., labor on Wausau orchard	13 00
155	Riordan, D. E., labor and rent, Eagle River Station....	35 00
156	Loope, T. E., bal. due on Pan-Am.	8 65
157	Herbst, J. L., 4th quar., salary	75 00
158	Herbst, J. L., supt. trial orchard	25 00
159	Herbst, J. L., exp., secretary's office	84 37
160	Kellogg, L. G., supt. trial orchard	25 00
161	Loope, T. E., exp., pres. office	25 00
162	Kellogg, L. G., exp. acct.	15 80
163	Hatch, A. L., delegate to Algoma Society	6 40
Total		\$3,303 20

Mr. President, and Gentlemen of the Executive Committee:

The mailing list of the Wisconsin Horticulturist contains at this date 585 names. Eighty-eight (88) have already renewed for the coming year, 1902. This is a larger number than is usual before the Winter Meeting; 181, besides the above 88, have paid until March, 1902; 153 have paid until March, 1901. Most of these will probably renew for 1902, sending the pay for both years together. At least this has been the custom heretofore.

We send out 18 exchanges and 17 complimentary copies. The complementaries for the most part are to experiment stations, horticultural societies, and the like.

One hundred twenty-nine have not paid since 1900 and must be *punched up*. I have begun this duty, and am proceeding to punch as rapidly as I can, and as *hard* as I *dare*. I fully intended to have these 129 delinquents all looked after before this meeting, but had an attack of the "grippe" about the first of January, and you all know how one feels after the "grippe"; the average mortal procrastinates whatever *can* be procrastinated—so I procrastinated.

Respectfully submitted,

MARY C. C. JOHNSON.

The Wisconsin Horticultural Society,
 In account with Mrs. Franklin Johnson,
 From January 15, 1901, to February 4, 1902.

Dr.

To expenses	\$56 31
To salary	200 00
	<hr/>
	\$256 31

Cr.

By receipts	\$66 44	
By salary paid	100 00	166 44
	<hr/>	<hr/>
		\$89 87

Election of officers being next in order, the president appointed as tellers, Mr. Busse and Mr. Starr.

It was moved by Mr. Jewett that the secretary be instructed to cast the ballot of the convention for Dr. T. E. Loope as president. Carried.

On motion of Mr. Kellogg, the secretary cast the ballot for Mr. Edwards as vice president.

On motion of Mr. Toole, the corresponding secretary cast the ballot for Mr. Herbst as secretary.

On motion of Mr. Kellogg, the Secretary cast the ballot for Mr. Marshall as corresponding secretary.

On motion of Mr. M. S. Kellogg the secretary cast the ballot of the society for Mr. L. G. Kellogg as treasurer.

The following executive committee was elected: T. E. Loope, J. L. Herbst, L. G. Kellogg.

1. Mr. Henry Tarrant.
2. Prof. E. S. Goff.
3. William Toole.
4. J. H. Cooper.
5. Geo. J. Jeffrey, Milwaukee.
6. Mr. Laiten, of Omro.
7. J. J. Menn, of Norwalk, re-elected.
8. C. A. Abbott, re-elected.
9. A. L. Kreutzer, of Wausau, re-elected.
10. D. E. Riordan, Eagle River, re-elected.

REPORT OF JUDGES ON FRUIT EXHIBIT.

A. D. Barnes, Waupaca, Wis., 1st on the following plates of—

Malinda	\$1 00
Newell's Winter	1 00
Snow	1 00
Jenny	1 00
Plum Cider	1 00
Winter Seedling	1 50

2nd on following plates:

Perry Russet	50
Wolf River	50
McMahon	50
Wealthy	50
Pewaukee	50
Mann	50
Fall Orange	50
Scott's Winter	50

\$10 50

E. Wyman, Casco:

1st, Ben Davis	1 00
2nd, Talman Sweet	50

\$1 50

Edwin Nye, Appleton:

2nd, Fameuse	50
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Parsons & Loope, Eureka:

1st plate, Duchess	1 00
Wealthy	1 00
Gano	1 00
McMahon	1 00
Blue Perimann	1 00
Sweet Pear	1 00
Gideon	1 00
N. W. Greening	1 00
Willow Twig	1 00
Pewaukee	1 00
Perry Russett	1 00

Rhode Island Gr.	1 00
Golden Russett	1 00
Mann	1 00
Fall Orange	1 00
Longfield	1 00
Krusier	1 00
Wolf River	1 00
Scott's Winter	1 00
Walbridge	1 00
Burr's Sweet Seedling	1 00
Salome	1 00
Talman Sweet	1 00
Shurawasa	1 00
Antonooko	1 00
Patten's Greening	1 00
Uransky	1 00
2d plate, Ben Davis .....	.50

\$27 50

Gertrude M. Cairns, Ellsworth, Wis.

2nd, Winter Seedling..... 1 00

A. N. Kelley:

1st, Menn Crab 1 00

A. L. HATCH,
L. G. KELLOGG,
W. N. HALL.

Prof. Goff: I want to say something in regard to our library; I very much regret that our library is in the condition that it is in, and that our Society has no home in this building. We always are able to get a room somewhere in the building, to hold our meeting, and I do not see why we cannot have a room somewhere in the building that we may call our permanent home, and I would like to make a motion that a committee be appointed by the chairman to wait on the Governor and make this request. We have a new governor, and it is possible we may get a hearing.

The motion was carried and the president appointed the following committee: Prof. Goff, Mr. Converse and Mr. L. Kellogg of Ripon.

THURSDAY AFTERNOON SESSION.

Mr. Barnes extended an invitation to the Society to come to Waupaca for the summer meeting.

Report of Committee on Revision of Fruit List was given by Mr. G. J. Kellogg as follows:

Committee on Fruit list would respectfully report:

That the heading of Pg. 20 be changed from "Am. Pomological Society" to "Wisconsin State Horticultural."

That to the description columns be added one marking the hardiness of varieties on a scale of 1 to 10.

That the column now marked quality be changed to dessert and marked on a scale of 1 to 10.

That a column be made for kitchen and for market and marked on a scale of 1 to 10.

These three columns be in place of "quality and use."

Take off star from Fall Queen which is a Virginia apple and we cannot recommend it.

Add star to Malinda.

Add to list of crabs:

Lyman's Prolific crab.

Sweet Russett.

Shields.

Add to apples:

Flushing Spitzenburg.

Dominion Winter.

Murphy's Greening.

Louise.

Fall Stripe.

St. Lawrence.

Red Astrachan.

Murphy's Blush.

Early Yellow Sweet.

Prolific Sweet.

STRAWBERRIES.

Cross off star from Wilson and Sparta.

Star Glen Mary.

Spell Gandy not Grandy.

Add:

Bennett.

Ridgeway.

Sample.

Rough Rider.

Emperor.

Empress.

Excelsior.

Gladstone.

Johnson's Early.

Klondike.

Kansas.

New York.

Nic Ohmer.

Pride of Cumberland.

Parson's Beauty.

Seaford.

Tubbs.

Dunlap.

Add to Grapes:

Campbell's Early.

McPike.

To plums add Shipper's Pride and arrange this and all lists alphabetically.

Correct punctuations in shrubs.

GEO. J. KELLOGG.

Prof. Goff: There is one thing I would like to bring up, if it has not already been brought up, and that is in regard to the historical work of this Society that Mr. Hoxie had undertaken and was obliged to lay down. Something will need to be done

in regard to it. I promised Mrs. Hoxie that the subject would be considered at this meeting.

After some discussion it was decided by common consent to leave this matter with Prof. Goff, he to select anybody he might wish to act with him in the work.

WHAT THE EXPERIMENT STATION IS DOING FOR HORTICULTURE.

By Mr. E. S. Bigger.

There are two classes of people which students are constantly running up against. The first class are those that think that we think we know it all, or in other words, that our heads are swelled. Now that is not the case; our heads were all larger in the beginning than they are now. We have found that there is so much that we do not know that we feel that we almost have no heads at all, and, by-the-way, this is not a bad lesson to learn, either. The other class are those who think that because we have been educated to become horticulturists, that we ought to know it all. Now that is a worse mistake than the other; for we well know that in the few short years that we are here, that we can not grasp all the facts that a lifetime of study and experiment will give you. I know there are many things about horticulture that you know that I do not know, but I know many things about horticulture better than I did when I entered the short course. A student may come here with little or no knowledge of horticulture, and before he leaves he will have learned a great many things about plant life and plant growth. He will learn that certain soils and plant conditions are essential to the growth of a crop. He will learn how to study and control these conditions; he will learn under what conditions seeds most favorably germinate, and how to select seeds that will germinate best. Much time is given to show how in the early spring by different methods of cultivation we can aerate the soil to make it warmer and dryer, and how later in the season we can best conserve the soil moisture. Last summer I saw a farmer plow under a stand of rye and try to grow tobacco plants. The rye

had taken nearly all the moisture out of the ground, and each time he tried to get a stand he failed. Now this mistake cost him a thousand dollars. Again I saw another farmer roll his tobacco ground—I am from a tobacco growing region—and the tobacco grew but little on this ground. Now I do not think a short course student would have made those mistakes; he has not only been trained how to do things, but when and why. Sometimes about the time we get everything growing nice and the horticulturist is just ready to go fishing, along will come some worm or bug or fungous growth which, if not properly dealt with, may perhaps ruin the crop. So again a student is given training in studying the best methods of dealing with these injurious fungous growths and insects. He will know what methods to take in dealing with the codlin moth, scabs, scales, etc. Every interested student may become an expert in compounding an application for fungicides and insecticides. This study of the cause and cure of plant diseases I consider one of the most important in the whole course, for who enjoys a wormy apple, a scabby potato, or a curculio eaten plum, and why must we when these things can be prevented? After we have matured a crop for the market, we are but little ahead if we can not sell it, and nothing aids more in the selling of a crop of fruit than the proper crating, boxing or barreling of the same. The student is given much training in the proper methods of picking the fruit and keeping it cool and dry afterwards. Many are the facts and illustrations given as to the best methods of fertilizing the soil, the importance of the legumes is dwelt upon, the student is made to understand the principles involved in plant growth and knows why some plants exhaust the fertility while others add to the fertility. Every year 100 men go out from this station with a thorough training in the principles of pruning, of grafting and of making green cuttings. I need say no more in regard to the training of students; suffice it to say that in the two short periods we are here, we get a vast amount of condensed information pumped into us, which has been gained from years of experience, and which we can elaborate and use to good advantage in years to come.

On motion of Mr. Barnes, Mr. Bigger was made honorary member.

It was moved by Mrs. Campbell that in the volume of transactions hereafter there be an "In Memoriam," under which shall be printed the names of all members in good standing who have passed to the life beyond. Carried.

CULTURE OF BULBS.

By Edwin B. Skewes.

This paper is written in the interest of the home garden. It is not expected to add to the knowledge of the professional floriculturist, or of the experienced gardener, but to stimulate an interest on the part of the inexperienced in a large and valuable class of flowers that are often neglected because not quite understood.

It goes without saying that bulbous plants furnish our earliest flowers and some of the most easily grown house flowers. They are also among the most prompt to furnish color display after setting out, and the long rest period of many species permits of an after planting of foliage or flowering plants that makes possible an extended season of bloom or color for a given spot of ground. Then, too, the small amount of root space they require, and the promptness with which they flower admirably fit them, in many of their species, for planting in nooks and corners and in unfilled angles in the shrubby or herbaceous border. These good qualities, aside from others that might be mentioned, should secure bulbous plants a prominent place in the garden plan of every home, and the subject of bulb culture is therefore of importance to every flower grower.

The difficulties to be met in growing flowers from bulbs and the similar class of tuberous-rooted plants are not serious if one has good bulbs and tubers to start with. In many species, chiefly the early flowering ones, the bulb or tuber contains within itself food for its future flower—all, or nearly all, that the flower will ever get. In the later flowering species the bulb supplies the food for the establishment of the plant, and upon the bulb depends the vigor of the plant, and therefore much of its flowering capabilities. If the bulb be full and

strong,—that is, well stored with food, well matured and well preserved, abundant and well formed flowers may confidently be expected, suitable conditions for growth at the flowering season being present. Fortunately, such suitable conditions are easily supplied. Species vary, of course, in their habit, and one needs to know the requirements of each in regard to time of planting, depth of planting, character of soil, supply of moisture, exposure to sunlight, and protection from cold. These known, and with good bulbs to plant, successful results in flowers should follow. He who would practice bulb culture, therefore, will find his chief problem in how to secure good bulbs. In many cases it is better and cheaper to buy from those who make a business of bulb growing, than to grow them one's self. But if one buys, he should buy only the best (not necessarily the highest priced); and if he grows them, he should grow them the very best he can. The cultural details for even the more common of the bulbous plants would be too numerous to present at this time, and it is not desirable to present them in this connection either. It would be better for him who would grow bulbs to get a "book of directions," for it is not so much the general methods of treatment as a considerate adaptation of surroundings to the little details of their life habits that makes bulb culture successful. Many bulb catalogues give fairly satisfactory directions for culture, and there are a few standard works on the subject, but any or all should be supplemented by notes from one's own experience.

Though cultural details are not desirable in this paper the statement of a few general principles will be permissible.

WINTER PROTECTION.

Tulips, crocuses, jonquils, and other hardy species are not materially injured by freezing, though perhaps a few species are injured by very severe cold. Repeated freezing and thawing, however, is decidedly injurious—often disastrous. Protection is therefore desirable for all bulbs in this climate. The best covering for the purpose is fallen leaves mixed with sifted coal ashes. The ashes prevent mice from harboring in the leaves and burrowing after the bulbs. This covering needs to be boxed or else held in place by coarser material, such as

pine boughs or marsh hay weighted down. For the very hardy bulbs, the coarser covering alone would be sufficient. Hyacinths and most lilies should not be allowed to freeze. To prevent freezing the covering of leaves and ashes should be six or eight inches thick, and extend for at least two feet beyond the margin of the area to be protected. Coverings should be removed promptly as soon as the plants begin to appear above the ground in the spring. If late frosts threaten, protect temporarily with mats or a light covering of leaves.

SHADING THE GROUND IN SUMMER.

Most bulbs require a cool, moist soil for successful flowering. For the late flowering species it is therefore well to cover the ground with lawn clippings or some such material to prevent overheating of the soil by the sun's rays.

BEDDING BULBS.

When selecting bulbs for bedding purposes, one should select from named varieties, otherwise he will be likely to have different shades of the same color, and confused and inharmonious combinations. Mixtures are sometimes permissible,—even desirable. But there are mixtures and mixtures,—some mere conglomerations of color, others a lovely blending of harmonious colors; some composed of first quality bulbs, others of inferior quality bulbs and odds and ends.

SEASONABLENESS OF PLANTING.

Snowdops, crocuses, hyacinths and tulips are essentially spring flowering, and it will not do to delay planting them until spring. Such bulbs must be planted in the fall. Gladioli and dahlias, on the other hand, are late summer and fall flowering, and there should be no hurry to get them started in the spring. Many species can be taken up and stored in a dry place for a long time,—crocuses and tulips, for example. Others can bear but little exposure to drying atmosphere or remain dormant for any length of time, *Lilium candidum*, for example. These characteristics at once suggest the necessity for a different mode of treating the bulbs in regard to transplanting or storing.

SPECIAL METHODS: BULBOUS PLANTS FROM SEEDS.

Many species are propagated readily from seed; and while few varieties "come true," uniformly good results are obtained if proper care is taken in selection of seed. Cannas and dahlias, for instance, flower the first season from seed and produce even better flowers when treated as annuals than when grown from divided tubers. Seedlings of the garden or late flowering tulips are unique in that for the first years of their blooming they have solid colors, but after from one to five years, they break into distinct types of markings and may be propagated by offsets "true to type." This class of tulips is grown very largely from seed, the best flowered bulbs propagated by offsets before they "break," and sold under the name of selfs, mother-tulips, and breeders. These selfs are, perhaps, the best thing among late flowering tulips for the amateur to buy, for they produce magnificent flowers of rich solid color, and will sooner or later break into more or less beautifully marked types. It takes from two to six years for seedling tulip bulbs to attain to flowering size. As experience is gained in the handling of bulbs, other special methods will suggest themselves and thereby add to the pleasure of bulb culture.

In conclusion it may be said that bulbous plants have just as beautiful flowers, and in almost as great variety as any other class of plants. They are easily grown, but have ways of their own, and their whims must be humored before success will attend their culture.

Mr. Fagg: I have found in the last few years that in planting the gladiolus that the bulb needed a treatment similar to the annual, and it seemed that the first year of my adopting that treatment, that my experience bore out this point: that while in moist soil, that is, not sandy soil, but stiff clay, it might be proper to plant the bulb say an inch or an inch and a half deep, yet where the ground seemed to be sandy, like sandy clay, and where there is a great deal of moisture in the ground, that it would be best to plant the bulb at least two inches deep.

Mr. Pease: I grow gladioli by the quarter of a million, and my soil is clay. I plant gladioli 4 inches deep and I will not plant them shallow. I think that, other things being equal, the larger the bulb the stronger the flower, but there are many good varieties that have passed out of existence simply because they cannot be multiplied in commercial quantities.

Mr. Kellogg: I would like to ask Mr. Pease the best plan of wintering the canna?

Mr. Pease: The canna is a pretty difficult thing for the average grower to winter. A cellar that is cool enough to winter anything else in, is too cool for canna. I have a cellar so arranged that I have a stove in it, and I have a hole bored through the floor, with a cork that fits in, and by means of a string a thermometer is attached, and I pull up the cork occasionally with the thermometer attached to see how it registers. I think about 55 degrees is a nice temperature to keep the cellar; it is difficult with the stove to regulate it, but I try to keep it somewhere in that neighborhood.

OUTDOOR ROSES.

By George J. Kellogg.

Mr. President, Ladies and Friends:—With a front yard of one thousand roses dead from the dry winter of 1899, how can I take up this subject? It is always necessary to bury the dead, and sometimes write up their obituaries with remembrances of their good qualities. In this case, it is the living we wish to commemorate. I know of no flower that grows that is so near queen as the rose; from early June till snow enshrouds the latest buds, there is nothing can compare with the rose. How shall we have them in profusion and enjoy their beauty and fragrance the livelong summer?

PREPARATION OF SOIL.

The best time to prepare the rose border, bed or plantation is in October; it may be done as early in April as the ground will do to work. If the ground is level and clay subsoil, it

should be underdrained; if any hard subsoil, it should be well loosened up at least eighteen inches deep; if clay, the lower nine inches should be inverted and left at the bottom and thoroughly mixed with sand at the rate of one two-horse wagon load to every square rod, and the surface nine inches should be well mixed with one-half cord of well-rotted cow manure to the square rod; thoroughly rake and pulverize, and your ground is ready to plant. Never plant under the shade of large trees. The plants should be strong, two years old; if budded, you will need to cut out three-fourths of the top; if on their own roots, cut back in proportion to the roots.

DISTANCE TO PLANT.

If there is plenty of room, four feet is near enough, but with the border rich they may be planted from one to two feet apart and prove a success. The Climbers will need more room and should be planted alone; still, with proper support, they may occupy the background along with the free growing Hybrid Perpetuals, placing the smaller growers, such as the Teas, Polyanthus, and any of the smaller classes in the foreground.

PLANTING.

Best time is after danger of frosts is past in the spring. If your roses are budded it is necessary to incline them at an angle of forty-five degrees in the direction you wish to lay them down for winter; there is danger of breaking off the top where budded,—set them so this connection will be four inches below the surface. Roses on their own roots are much the best, and, too, they will be easier put down for winter if properly inclined. If budded roses are planted, watch for the sprouts that come below the bud; you will need to dig down and tear them out to prevent their sprouting again. If allowed to grow, they will rob the bud or grafted bush, which will die. Many a bush has been broken off at the bud and the root has sprouted, and the wonder is, “Why does not my rose bloom?” The fact is, you have nothing but the wild stock, some of which never bloom. Some dealers grow all roses on their own roots, others bud nearly everything. In planting, be sure to place

the roots in natural position and press the earth firmly to the roots; water well, and if plants are in leaf, shade from the hot sun for a few days.

CULTIVATION AND PRUNING.

A heavy mulch of well-rotted manure is always beneficial after planting, working it into the soil by frequent cultivation; let no weed grow, but do not wait for weeds; thoroughly stir the surface two inches deep every week. The bushes may be kept and trained in any form. I have had Jacqueminot stand without support six feet high, in bloom from top to bottom; but it is better to pinch off the tall shoots and keep them in more compact form. Some plants set more buds than they can mature; prune these severely; all shoots should be cut back in spring one-third to one-half of the previous season's growth.

VARIETIES.

How can we select, when one of our best rose growers catalogues six hundred and thirty kinds, classes and varieties? Of these I have grown over ninety varieties. When there are a hundred new choice roses coming to the front every year how can we make a list? Of climbers I would have all the four Ramblers, perhaps the five, Queen of the Prairie, Baltimore Belle, Greville or Seven Sisters, Rosa Cetegeia or Single Michigan, the only old standby that requires no protection, and Gem of the Prairie. Of Hybrid Perpetuals plant Gen. Jacqueminot, Gen. Washington, Fisher Holmes, Mad. Chas. Wood, Dinsmore, Earl of Dufferin, Maurice Bernardin, Magna Charta, Paul Neyron, Jules de Margottin, Vick's Caprice, Barronne de Bonstettin, La Rienc, Anton Monton, M. P. Wilder, Coquette des Alps, Damask, Mrs. John Laing, Coquette des Blanche, and while Madam Plantier is classed as Hybrid Perpetual, and H. China, although only a June rose, I would not omit it in any collection, because of its vigor, free blooming, beauty and hardiness. Of the Everblooming, Tea, Bourbom and China, plant Agrippina, The Queen, Hermosa, Malmaison, Perle des Jardins, and Papa Gontier. Of Polyanthus or Fairy Roses plant Etoile d'Or, Little Pet, and Miniature. Of Mosses Blanche Moreau, Countess de Murinais, Glory of Mosses, Henry Martin,

and the old English moss. Of Hybrid Teas, Meteor, Pierre Guillott and Souv. de Wootton. Of Rosa Rugosa plant both white and red. Of Yellow, Harrison and Persian. Do not omit some of the eight new hardy Hybrid Wichurian Memorial Roses.

If you have room you will be delighted to add fifty more to the above lists, if you have only room for a dozen then I would select Queen of the Prairie, Crimson Rambler, Seven Sisters, Mad. Plantier, Gen. Jacqueminot, Mad. Chas. Wood, Paul Neyron, Mrs. John Laing, Barronne de Bonstettin, Coquette des Blanche, Little Pet and the old English Moss and to complete the dozen add Rosa Rugosa and of the Wichuria, Jersey Beauty, this makes a full dozen of fourteen. The best two new roses at Buffalo in October were "Burbank" and "Cochet."

INSECTS AND REMEDIES.

From the time of planting look out for the slugs, later on the rose bug and the green caterpillar that delights to feed upon buds just ready to open. White Hellebore, if fresh and pure is a safe poison, dust it on with the dew. Kerosene Emulsion, two parts kerosene, one part slightly sour milk, agitate till it forms a jelly, dilute with 20 parts soft water. Tobacco water, steep the leaves or stems till a tea of good color, spray upper and under sides of foliage or apply it with a whisk broom or sprinkler. Be ever on the watch for the enemies, apply the remedies freely but avoid covering the opening roses. Roses should be cut every morning to remove the burden of the bush and to cheer some sick room, or a precious gift to some city friend; never allow any seed buds to remain on the bush except on Rosa Rugosa.

WINTER PROTECTION.

Rose dealers do not advise winter protection, they rather sell a new supply every year. In case of a winter like 1899 I know of no protection that would carry them safe through except it be a heavy mulch and two barrels of water to the square rod in November, besides the following winter covering. If the bushes were set inclined they will easily bend to the ground, a little mound of fresh earth placed about the root will save entire

loss if mice get in; then add leaves, inverted sods or marsh hay, evergreen boughs, sacking, in fact anything that will keep the sun off and keep from the continual thawing and freezing of February and March; keep a bush frozen and out of the drying winds and there is little danger from cold. If the border can be enclosed by boards a foot wide (and your wife does not object) fill the bin with forest leaves, put on a few evergreen boughs and cover with boards for the half hardy teas and ever-bloomers, or you can mound up with earth half way the bush, fill in leaves, cover with marsh hay and boards; this will usually keep any of the half hardy sorts safely.

Cover about the 1st of November, sharp frosts will not injure except in spring. One of our successful amateurs said "cover roses election day and take off the covering town meeting day," which is a good rule to follow. By uncovering early in spring before the buds start, the buds will harden with the cool nights like the grape buds and will stand more frost than if left under cover till the buds are white. Set late enough in spring to avoid the late hard frosts.

Mr. Davidson: People will ask for the old cabbage rose. Now I would like to ask Mr. Kellogg if that is the real name of the rose, or is there some other name for it?

Mr. Kellogg: We have no name in the list that is called the old cabbage rose. It is one of the June roses; I have had it under three or four different names. It is hard to find; it is one of the June roses and a very fine old variety.

Mrs. Campbell: I would like to know how we are to know whether we get roses grown on their own roots or not.

Mr. Kellogg: You can order of such men as advertise roses grown on their own roots, or you can order with a view of ordering anything, nothing budded, then they should send you only the roses on their own roots. You can tell them when you receive them, you can distinguish the budded part a great deal easier than you can a grafted tree.

Mr. Gibbs: I would like to see added to that list the Damask Rose introduced by Mr. Manning of Massachusetts. It is said to be the rose grown so largely in and about Damascus, used to

manufacture the celebrated attar of roses, and it is a lovely rose, a very free bloomer, and I would never want my rose garden to be without it.

HOME, PLANNING AND PLANTING THE GROUNDS.

By F. E. Pease, Des Moines, Iowa.

To a refined nature the word Home is one of the sweetest in their language, and signifies the dearest spot on earth. There are some places called Home which are such in appearance only, and there are others which do not have even the appearance. A Home is in reality what those who occupy it make it. The environment of a Home is of the greatest importance. Proper environment adds to its enjoyment; exerts a good influence upon those who occupy it or come in contact with it; and a prime factor in making it really and truly a Home. Man's first Home was in a Garden, and to our mind that is the only proper place for one.

To a great many, the word Garden signifies merely a place where vegetables are grown. It is far more than that. It includes the entire grounds upon which plants are grown to a less extent than that of field culture. The divisions referred to as Lawns, Shrubberies, Flower, Fruit, and Kitchen Gardens, are but parts of the one complete whole.

The first step in the horticultural improvement of a home is to prepare the ground. This does not mean that you should grade and level down all the beautiful curves and undulations with which nature may have endowed your grounds, and thus spoil it, but simply assist what nature has done and so far as possible remedy the defects caused by man, animals, and the elements. The small depressions, holes, etc., should be leveled and stumps, stones, etc., removed, so that a lawn mower may be passed smoothly over the surface. The entire grounds should then be placed in first class tillable condition and fertility.

The next step is to locate the buildings. The residence should occupy the most eligible site, well back from the street. The barn a good location back of the residence. The next step

is to locate the driveway. Select the most natural convenient place of entrance from the street; that is usually near the corner on the side from which you expect the greatest number of visitors. Lay the drive nine feet wide, in a natural easy curve to the side of the residence. Never lay a drive across the lawn in front of the house, but let it approach the house on the side, conveniently accessible from the front door. Let the drive extend sufficiently to the rear of the house to afford room for a carriage turn. This may be made in front of, or near the barn.

Nature does not make paths or driveways, neither should we, except where they are absolutely necessary. A driveway or path should be planned on a natural, easy approach and at no part of its course lead away from its objective point. The next step is to decide how you will improve the street line. The English idea is to exclude the public gaze altogether by a wall of some kind. The American idea seems to be to throw the grounds wide open to public view. In my opinion a medium between those extremes is best. I like to have the grounds enclosed in some manner. There is then a sense of ownership and privacy, not afforded by unenclosed areas. My preference for a street line enclosure is a brick or stone base wall surmounted by a neat iron fence. The wall and fence at path and drive entrances to curve, in conformity therewith, from three to fifteen feet into the grounds and terminate at good substantial gate pillars.

The side lines may be enclosed with any neat fence or hedge. We now have the outlines complete, ready for planting. In natural landscapes, we do not find square corners. Every angle is softened by the graceful outlines of trees and shrubs and every tree or group bears an apparent relationship to the rest of the planting. An occasional plant is allowed to develop in unchecked form by way of contrast, but nearly all of nature's plantings are in bold masses or harmonious groups, in irregular outlines. Here we get the idea for our planting and the better we can accomplish it, the greater we may claim our skill.

With this idea in view, plant a group on each side of the path and drive entrances, and sufficient groups along the street line to give an air of privacy and yet afford glimpses of the interior. The size and form of these groups, and the size and character of

the plants used, will afford ample variation, and may be made to produce a charming effect.

The improvement of the side lines, is best effected, I think, by planting a border of such height and width, as will conform to the size of the grounds. These borders may be planted with trees and shrubs or with herbaceous perennials, or all may be used in conjunction. Before planting the borders, ascertain the desirable views that may be had, and mark the view points; then preserve these views, by planting lower growing plants at the view points. The border plantings should present an irregular front, broken into bays and promontories, proportioned to the grounds. The skyline should also be broken, by using plants of irregular height growth.

The corner of the street and side line may be softened by planting an irregular group on the street line near the corner, extending some planting well back into the corner. Then planting the side line very narrow near the corner, gradually widening into a bold curving border. If the plants directly in the corner are low, a good view may be preserved in that direction. The eye guided to it by the nature of the planting on either side will take greater pleasure in its contemplation, and besides we have relieved the grounds of the formal regularity. Where the border, starting from the street corner, gradually widens into a sweeping curve, then recedes, forming a deep bay, one may fill that bay with masses of herbaceous perennials, each variety and color by itself, and produce a fine effect. Flowers show to much better purpose when provided with a background of leafy foliage.

To my mind, many people overestimate the value of grass, and are prone to be stingy of space in their border planting. I would rather have lots of flowers and shrubs, and less grass. Grass plots and borders are necessary in all ornamental plantings, but a square of grass without shrubs is simply a little meadow closely mowed.

The planting of groups along the driveway, or in other parts of the grounds, or other trees than those that may possibly be used in the plantings herein outlined, are matters of detail that cannot be indicated in a general way, but must be suggested to suit the particular grounds under consideration. There should

be some planting around the house, not enough to hide it or wholly conceal its foundations, but sufficient to soften its angles and drape the verandas. The planting around the barn should be sufficient to conceal the operations connected with such structures, but not to hide it, as its absence, especially on suburban grounds, would convey an idea of incompleteness. The flower garden should occupy a position to the rear and side of the residence. The Kitchen and Fruit Gardens well to the rear. The open spaces outlined by these plantings should be sown with grass and kept closely mowed.

By planting, planning, arranging, and rearranging, we gradually weave in a great deal of our personality, until, after awhile, it reflects much of our own life, and sympathies. Then, so far as the grounds are concerned, it is really our Home; part and parcel of ourselves interwoven by intimate acquaintance and companionship.

The following is a list of trees and plants that are hardy at Des Moines, and of especial value for home planting: Deciduous Trees—Cut Leaved Birch, *Catalpa speciosa*, American Chestnut, Hard Maple, American Linden, White Elm, Green Ash, Mountain Ash, Sycamore, Bird Cherry, and Laurel leaf Willow.

Evergreen Trees—White Pine, White Spruce, Norway Spruce, Colorado Blue Spruce, Concolor Fir, American, Siberian, and *Pyramidalis Arbor Vitaes*.

Shrubs—Berberries, Red-twigged Dogwood, *Weigela rosea*, *Deutzia Pride of Rochester*, and *Lemoinei*, *Exochordia*, Golden Bell, Bush Honeysuckles, *Hydrangea paniculata*, Mock Oranges, Double Flowering Plum, Golden Elder, spirals, Lilacs, Snowball, *Rosa rugosa*, Sweet Briers, *Tamarix Amurenses*, *Virgilia lutea*, and *Xanthoceras*.

This last is not well known, but is one of our finest shrubs.

Herbaceous perennials—*Paeonias*, Phlox, Columbines, *Coreopsis lanceolata*, Larkspurs, *Hemerocalis flava*, Hibiscus, *Lychnis*, Iris, Poppies, *Platycodon*, *Rudebeckia*, *Erianthus ravennae*, and *Eulalia zebrina*.

Vines—*Wistaria*, Clematis, Honeysuckles, Roses, Bitter Sweet, Dutchman's Pipe, and Virginia Creeper.

It is not advisable to use a long list of plants, unless you wish

a plant museum, and even then it is better to group them into botanical families. If your grounds are limited, better plant fewer varieties and more of them. A single plant is not always satisfactory, but a mass or group of them fill the eye with sufficient color to attract and please.

Now just a word about planting. *Don't* dig a little post hole in the sod, jam the plant into it, carefully replace the sod and expect it to ever amount to anything. Dig a big generous hole, large enough to contain the roots when they are spread out in a natural way, and deep enough that the plant will stand fully as deep as it stood in the nursery. Cover the roots with clean, fine, fresh soil, firm it down well, leaving only the last inch or so loose. Give the plants good cultivation, and they will soon conceal any fancied defects such large holes may have occasioned.

Every well planted Home is a footprint, that indicates the direction we are traveling. If we would see such improvement in the human race, that the glimpse in the beginning shall be the reality of its close, we must make tracks for Eden.

Miss Cairns: I would like to ask how far north that spirea would be hardy?

Mr. Elliott: It is perfectly hardy; never kills.

Miss Cairns: Also the barberry that was spoken of, the Chinese barberry, how hardy is that?

Mr. Pease: I regard it as quite hardy; I do not know how far north it will stand, but I think it will go pretty far north; it seems to be well established.

A Member: I would like to ask whether the white lilac is reliable?

Mr. Pease: Yes, they do very well. I think there is nothing that is more reliable than the white and purple lilac; I think when they are full of bloom they are as pretty as anything.

Prof. Goff: Somebody asked about the Chinese barberry. I think that is perfectly hardy here; we have not grown it very

long. Somebody asked my choice for a hedge; I would say arbor vitæ. I like an evergreen hedge that is green all the year around and perfectly hardy; it grows on poor land, dry land and moist land after it is hardy. It does not grow high; it can be kept short.

Mr. G. J. Kellogg: You cannot succeed with an arbor vitæ hedge under big shade trees; it will eventually die. The best success I have ever seen with arbor vitæ hedging was down at Clinton, New York, this last fall; I did not see a gap in that hedge, I should think it was a half mile long on the inside of walks, but I have not seen it in the west here anywhere but what evidently it was going dead in spots, and you cannot replace it. I would not plant it except where it is entirely from any shade trees.

TREE AGENT AND NURSERYMAN.

By M. F. Foley, Baraboo.

Tree agents are as necessary to the Nurserymen and their customers as are the commercial agents in any other line of business. The wide-awake nurseryman who has a fair amount of business ability and faith in his calling can not content himself with the small amount of local trade he can pick up in his own neighborhood. If he can grow the trees and raise the stock, the next thing is to sell it.

An honest nurseryman with good trees, faithful agents and intelligent customers, lead to good orchards and an abundance of fruit. The agent is an important factor in this combination, for I could mention you hundreds of acres of successful orchards which would never have been planted were it not for the tree-agent and his unfailing efforts.

We are proud of the work of our Horticultural Societies and give due praise to those who have shared their experience through the press with their fellow-men. The tree-agent has learned from all of these sources and used his knowledge for the benefit of his patrons. If it is praiseworthy to preach the gospel of homes improved and promote love of horticulture in our

society work, is it not commendable to go forth to the homes of the people and induce them to plant fruit-trees, Evergreens, flowering shrubs and small fruit plants? What if the tree agent may have made mistakes in his estimate of the value of some varieties? Have not the horticulturists made some mistakes also? Have we not among us many an orchardist who has made up his list from the reports,—had his orchard planted with trees direct from the nursery, who now wishes he could change what he got for some other kinds.

The vocation of the tree-agent is useful, honorable and necessary, and a high order of intelligence, integrity and affability are required to successfully follow it.

True, there are those within the ranks of tree-agents who have no business there, and it would be well for those who have a love for the work and a regard for the good name of their calling, if they would organize as a fraternity, embracing at least, two grades. Those that proved worthy, and those on probation,—rejecting all others. There is no reason why the business of a tree-agent should not be looked up to as an honorable one, of worth to mankind,—equal in its importance.

It would not be out of place for one who has had many years experience as a horticultural advance agent, to speak of some of the qualities necessary for success, that those who wish to take up this pursuit as a permanent business, may make a right start.

First of all,—is honesty. It may not help you to large orders at first but will count heavily in your favor in the future. Next,—we may mention energy, perseverance, tact, good humor under all circumstances, and not least a knowledge of the business.

In my judgment, public sentiment has changed very much the last ten years regarding tree-agents, and my actual experience substantiates my statement in saying that nursery firms are beginning to realize the fact, that agents, to be successful, must be exceedingly careful, honest, intelligent, good hard working men,—judges of human nature and always affable and anxious to please their customers. Otherwise, they will not win and retain the confidence of their patrons. A very important point is when an agent enters a town to begin work, he should make the best impression and appearance possible. He should pay his

hotel and livery bills promptly, select good company, work early and late, and show to the community and the public the straightforward principles of his business. In small towns, farmers as well as business men, are not long in finding out the habits and conduct of a stranger. A farmer is apt and quick to inquire of the banker or business-man as to the reputation of an agent of whom he has purchased stock, and when he meets his friends they are liable to converse freely, and discuss the good and bad qualities of a tree-agent and the general impression he makes in a community, and as a rule, farmers are ready and willing to speak a good word for an agent who treats them justly and right.

It solely lies within the means of an agent to establish himself in such a manner in the territory in which he is working, so that he will be able to hold it year after year. If he does not meet with very good success the first year, even though the orders be small and few of them, if he fulfills his agreements he will find that himself and the company that he represents will win the confidence of the people in general.

Further,—I wish to say that a company should be the promoter of an agent's success, in the way of assisting in fulfilling their orders promptly and properly, and in instances where it is actually necessary to substitute different stock, the company should use their best judgment in substituting something equally as good in every respect as the agent sold or agreed to furnish.

There are many things with which a tree-agent has to contend aside from whatever faults he may himself have. For instance,—the dishonesty of some nurserymen. It has frequently been the case where an agent has worked faithfully in a certain territory and received many orders for the firm for which he is working, then someone writes to the firm for prices lower than those of the agent. If he gets them, there is trouble for the agent and dissatisfaction all around. It is told of cases where the nurseryman has himself gone to, or corresponded with parties within the agent's field of work and underbids his own agents.

Dishonesty of customers is another disturbing element with which the tree-agent must contend, and he often has experiences which might tempt a weak man to condone with his own shortcomings.

Another phase of dishonesty has been brought out by the cus-

tom of late years of guaranteeing the trees and other stock to live. People have called for renewals of stock in excess of their losses, or to make up for their own gross carelessness.

Selling impossible novelties is not altogether the fault of tree-agents. The desire which many people have for something unusual, and to get ahead of their neighbors, has sometimes driven the agent to endeavor to supply what the people ask for.

I do not claim that tree-agents or their company are always to blame for the failure of some farmers with their trees, for the following reason: I have frequently noticed in my travels, a beautiful orchard well kept and bearing abundantly on one man's farm, while on the adjoining farm, which has fully as favorable soil and location for an orchard, where fruit trees have been planted, but few of them grew, and those that did grow yielded an inferior grade of the same varieties of apples as were grown on the adjoining farm. What is the cause of this? I will answer,—neglect, want of care and cultivation on the one that proved a failure, while the other showed that it had received proper care and attention. The farmers who have met with such failures will invariably blame the agent when the trees do not prove to be as the agent represented them. In such case it is the owner who is entirely to blame, for he does not give them the slightest cultivation, or sets them out wherever he may happen to have an idle piece of land.

A few words as to my experience in delivering nursery stock. I have made it a rule as much as possible, to personally deliver the stock that I had sold, because I believe that part of the success of an agent depends upon doing so, and customers as a rule, like to meet the party of whom they purchased their stock, for it gives them more confidence in the agent, and they feel that they are getting what they bought. The usual complaint of farmers is,—that one agent sells the goods and another agent delivers them, consequently, there is apt to be some dissatisfaction. However, it is not always the case that an agent who takes the order or sells the goods is a proper man to collect the bills. Some parties after having purchased nursery stock will resort to almost any means to avoid taking it on the day of delivery.

Mr. Edwards: I want to say in justice to that paper, there is a great deal of truth in it. I want to endorse it in nearly every particular. I have done a great deal of that work myself. I feel, too, that most all the business is done by personal representation, and the nurseryman is not represented; if the Wisconsin nurserymen do not come out with their goods and sell them, New York and Ohio will come in and do the business, and they will sit still and let them do it. That is a brief statement of the whole case, and I do not see why Wisconsin men should not do the business for the state of Wisconsin; I see no good reason, and I wish Mr. Foley were here, I would like to talk with him; I believe that it is just as possible for a man who is selling nursery stock to send his salesmen out annually and see those parties to whom he has sold goods, and if there is anything wrong they can have a personal interview; and that man, if he is doing an honest business, will fix that matter up, and give the purchaser a better deal than he would if he were doing this through correspondence. I think that is possible.

REPORT OF TRIAL ORCHARD COMMITTEE.

Mr. L. G. Kellogg.

Mr. Herbst and myself, last spring, went to Eagle River and planted the trial orchard, which was authorized by this society. Dr. Loope, our president, was authorized, in company with Mr. Kreutzer, to select a location for a trial orchard somewhere in the northwestern part of the state, and under this direction they selected a plat of land. It was rolling land, consisted of clay soil, it has a very good location for an orchard, and we planted upon this ground 225 trees.

The President: I wish to say in regard to that: I went there on about the 15th of November; it was cold weather, snow on the ground, and I drove up to the orchard about a mile and a half from town, and looked it over. I never was more surprised in my life than I was when I went into this orchard, for the reason that I did not expect so much. There were

new trees set out last spring; I did not expect much growth, but I will guarantee there were sixteen inches of growth on some of those trees, and there was a good growth on almost every one. I did not take much notice of the plums or cherries, but the apples had done very well indeed.

Prof. Goff made a statement in regard to the Gideon Memorial Fund, and asked the members of the Wisconsin society to join hands with the Minnesota members in raising such fund.

THURSDAY EVENING.

Invocation by Mr. Franklin Johnson.

THE USE OF NATIVE PLANTS IN HOME DECORATION.

By C. H. Ramsdell.

It is a very true saying that "Familiarity breeds contempt." How often one sees a man spending hard-earned money on an article marked "Made in Germany," or some other foreign country, when the same article is produced near home at smaller cost. A rather amusing incident illustrating this came to my notice a while ago: A gentleman, being in Minneapolis, bought several articles to carry home, among which were two bunches of fine celery, for which he gave a good price. Interested by the unusual quality of the celery, he asked the dealer where it was raised. To his astonishment, he was told it came from his own town, and was raised by a man well known to him. So he carried his celery back to its native soil, paid liberally for his eighty-mile trip and, we hope, learned a valuable lesson.

The very plants growing under our eyes are often overlooked, and tender exotics are cultivated instead, while as a matter of course, the natives grow better. I often hear it said, "Why, that's growing down in my woods," and the person believes it

fit only for the brush scythe and fire. But such persons often do not know the name of the plant in question, much less its flower, fruit, or uses.

ADVANTAGES OF NATIVE PLANTS.

A native plant, growing under its natural conditions, will thrive better than any introduced specimen, while at the same time it will be more in keeping with its surroundings. What can equal in effectiveness a well-kept grove of pines, oaks, or any of our large trees? Our native shrubs are in greater variety and just as desirable as those of other lands. And even a little collection of wild flowers, the trilliums, violets and hepaticas, can interest as well as the expensive orchids and tender greenhouse plants. The woods themselves become more interesting, if we recognize in them some species growing at home under cultivation.

One does not need to question the hardiness of natives. One can, by planting them, avoid the trouble of winter coverings, early and late frosts, and winter-killing. In the catalogue of one of the largest and most reliable nurseries of the country, located at Rochester, N. Y., are named as deciduous shrubs, about 175 species. Now, in this list there are only 65 of known, tested hardiness to the climate of the northwestern part of this state. As nursery agents offer plants from such catalogues, one can readily see the chances the amateur runs of buying stock which would soon winter-kill.

Of course cultivated plants are not to be underrated. If plants of other countries were not cultivated, probably most of the interest in horticulture would cease. But, up to this time, the greater part, perhaps, of work in experiment and cultivation has been with imported plants. Of course this is natural, since one appreciates something rare more than something common. On the other hand, natives are more easily obtained than nursery stock, thrive better and fit into a natural landscape at the same time. Cultivated stock flowers more, perhaps, grows in more conventional forms and is used more in formal gardening. So there is room and good use for both.

I quote a paragraph from the handbook for home decoration, published by the Stout Manual Training School, and written

by Warren H. Manning, the landscape architect of Boston: "In locating and defining outlines of plantations, definite purposes should be had in view, such as the screening of objectionable views, giving seclusion, separating parts of the grounds, uniting buildings with the grounds by a clothing of vines and by planting about foundations. Such plantations will usually be irregular belts and groups of large and small shrubs, and occasional small trees, all selected with regard to height, habit and foliage at maturity, and located to serve the particular purposes referred to. They should be arranged to leave the largest available central lawn space, in which there should be but a few single specimens of shrubs and trees and no formal beds of flowers, it being best to confine such beds to a special flower garden, or to use flowers in broadenings on the edges of shrub borders. Of course, to secure the best results, the whole space to be occupied by plantations should be thoroughly fertilized and spaded up, for shrubs do not do well in grass."

If, on a place to be improved, native vegetation is found, it usually can be used to good advantage. When large trees are so located, by thinning and trimming one can obtain the same result quicker than by planting groves of cultivated trees. Shrubs can be grouped or moved to plantations needed in the general scheme of improvement. Of course, any kind found undesirable ought to be taken out. Then, if other kinds of trees or shrubs are needed, some cultivated ornamentals may be added, in keeping with those already in place. Even the ferns and shade loving plants can be used where grass would be shaded out, and a little garden or border could be made for the wild flowers growing on the place. In fact, there are few native plants that are not desirable, ornamentally, in flower, foliage, or fruit, at some season of the year; and one will often be surprised to note how quickly they respond to good care and treatment. Some time ago, a lady told me that in a small city in Minnesota, she saw the red-berried elder planted as an ornamental on a number of places. "Now," she said, "do you know any nursery near here, where I can get one? They are so pretty." I told her if she would go three blocks over to the pond bank, she could find any number of them. This shows how much a native can be improved by care, and also

how one needs to go away to appreciate the common things at home.

FOR ORNAMENTAL PLANTING.

Ornamental tree planting serves practically the same purpose on the grounds that the interior furnishings serve inside the house, that is, to make the surroundings more attractive. The growing of trees for shade and windbreaks is also very important. Our native trees cannot be improved upon for these uses. Of course if these are fruit or nut bearing trees, then a double use of them is made. The boy on the farm can tell you where they are, their names and all about them, every time you ask him.

We often see native trees giving just as fine effects in foliage as the cut-leaved, scarlet-leaved or other horticultural specimens in the nursery. The birches, willows and mountain ash are among these. The appearance of our woods in fall gives proof of the rich colors of the trees native to the region. And we can obtain the same results with the same trees at home, on even a small place. The dark pines and evergreens are a feature of the winter landscape, and the contrast of the living green foliage with the dull winter colors makes their cultivation on the home place quite important.

The shade trees of this state are well known: the maples, preferably the hard or sugar maple, the basswood, the oaks, perhaps the poplars, the elm, the hackberry, and the box elder as a temporary kind. For foliage effects, the birches and willows are useful, the maples and oaks for their colors in fall. Among the smaller trees, the plum, the thorns, cherries and the mountain ash have both attractive flowers and fruit. In the list of nut trees, the black walnut, the butternut and the hickory give some shade, and are good specimen trees, besides affording a supply of nuts.

The mistake is often made of planting too many trees on a small space. This results in a crowded, spindling growth and misshapen specimens, instead of well-formed trees with plenty of air and room. Usually on a small place, one good mature tree will serve all needs. On the sidewalk line, one permanent tree every forty feet is enough. Often one sees trees

planted so close to the sidewalk as to be in the way. The foliage close to the ground holds snow and rain to shower the passerby, or interferes with umbrellas, etc. Then, too, the trunk may interfere with the sidewalk vehicles, and have its bark injured thereby. The roots also heave the brick, cement, or other sidewalk material used, and cause it to be uneven.

NATIVE SHRUBS AND VINES.

The sumac well repays its use, with its tropical summer leaves and bright red fall foliage. The dogwoods flower freely and are useful for massing. The elders, both the red and black berried, are desirable for flowers, foliage and fruit. For quick growing masses of foliage, the ninebark spiræa can hardly be equalled. The wild roses respond readily to good care, and the flowers, while they last, are attractive. The high-bush cranberry is effective and the other viburnums nearly equal it in flower and fruit. If the Indian currant is found native, use may be made of it as a low growing plant to face down a group of higher ones. Perhaps the laurel and lambkill may be found in the southern part of the state and, if used, the flowers would attract attention.

For hedges the use of the prickly ash, common barberry and thorn-apple will be effective. We can find a good substitute for the southern evergreen holly, for Christmas use, in the deciduous holly, growing in many swamps and low places, with red berries, but without the evergreen foliage of the southern species. Sumacs, willows, blackberries and raspberries will hold a steep bank as well, if not better, than any other shrub.

Vines of all sorts may be found native. The wild cucumber as an annual affords quick protection from the sun, but, as it turns yellow early, is not so desirable as a permanent vine. The woodbine, or five-fingered ivy, is very hardy, grows quickly, and has beautiful red foliage and purple fruit in fall. The bittersweet is a slower grower but has more attractive leaves than the woodbine, and in fall is covered with orange colored berries. The Minnesota honeysuckle, when found, is ornamental in flower. On some shady piazza or arbor, the clematis would be at home, and its masses of white flowers and delicate foliage make it a desirable addition to the list.

NATIVE EVERGREENS.

The use of evergreens for winter foliage effects is widely appreciated. For this purpose the native pines, spruces, firs, cedars, and hemlock are available. Pines can be grown on almost any soil. If the white pine will not do well, then the Norway might, and as a last resort the Jack pine can be depended upon. The spruce is very effective as a specimen tree for the lawn. The red cedar and hemlock give a denser foliage effect than the pines and spruces, and therefore can be used for backgrounds. In some localities of this latitude, the arbor vitæ grows native and, as an evergreen hedge, its use can hardly be equalled. A sandy bank might be covered with a growth of native juniper to good advantage. But in planting this kind of trees, a few are usually all that are necessary, as they give a somber effect if too close to buildings and are unhealthful there also.

To the lover of the woods, a wild garden is just as interesting as the usual one containing the standard favorites. One can with little labor grow at home in some protected corner, such plants as the trillium, bloodroot, violet, lady's-slipper, and later the golden rod, wild sunflower and aster. In fact, the golden rod and wild sunflower are so easily cultivated that they are useful as a border to larger shrub beds. Thus they add color at a time when leaves are dull and rather the worse for the summer's heat and drought. In any shady corner a collection of native ferns is interesting and instructive as well. Thus one can avoid the trouble from grass being shaded out.

SELECT GOOD SPECIMENS.

In collecting native plants, much care ought to be used. If those standing alone are taken, better specimens will result. In moving trees, the larger the tree the more care necessary. A root ball is quite essential where possible, especially with evergreens. As many of the smaller roots should be saved as possible. An evergreen whose fine roots are allowed to dry or wither, is almost sure to die. Sometimes it is desirable to cut back the top of deciduous trees if the roots are much damaged. Bruised root ends should be cut smooth. by Those trees

having long tap roots, such as the oaks, beeches and the nut trees, are especially hard to move. It is often a good plan, where practicable, to transplant these once or twice before planting in permanent place, as this encourages the growth of side roots with their hair roots, so essential to successful moving. Elms, maples, willows and poplars, growing more fine roots, are easier to transplant. Shrubs are easy to move for this reason, also. But the sumac, strange to say, often has long side roots and few small ones, and yet there is nothing easier to move and have it grow. Among the shrubs before mentioned, the sumac, elders, ninebark, roses, Indian currant, and high-bush cranberry, are quite sure to stand transplanting. The deciduous holly, prickly ash, laurel and lambkill require more care and attention. Transplanting either in spring or fall, when the wood is ripe and the plant not in growth, is practiced successfully. The herbaceous plants may be moved at any time with the earth around the roots. They are not at all difficult to transplant, although oftentimes they die afterwards because of unfit conditions. In any extensive cultivation of native plants, select those kinds growing under the same conditions as those where they are to stand. Or if this is impossible, or the selection does not suit, aim to make those conditions as nearly natural as possible. The more natural the conditions, the more satisfactory the results.

There are nurserymen and collectors in nearly all parts of the country who make plant collecting their business. Their prices are lower than on ordinary nursery stock. They will average about \$5.00 per hundred, or \$20.00 per thousand. But the plants thus obtained will be smaller than one can collect one's self.

In the cultivation of this branch of plant growing, there is much pleasure to be derived; for, to obtain the trees, shrubs, or flowers, takes one into the woods and requires agreeable work out of doors, and in planting them one works out his own ideas. Finally, to watch them develop and improve in flower, fruit, or foliage, is to see the results of one's personal care and attention. But above all, comes the satisfaction of knowing that one has made the best use of what is nearest at hand and also that

others may be influenced to appreciate the beauty of the commonplace.

The President: In the memorial service which we will now have, Mrs. Campbell takes the subject, "The Life of B. S. Hoxie."

Mrs. Vie H. Campbell: Mr. Hoxie dead!

"Say the same of the sunshine

When evening comes over the hill,

Say music is dead, when in slumber

The hand of the player is still.

Behold! the dimmed splendor has broken

In morning eternal and calm,

And listen, the player is sweeping

The chords of an infinite psalm."

Benjamin Sargent Hoxie was born at Orneville, Maine, August 6, 1827. He came west and settled in Cooksville in the summer of 1846, where he resided until the spring of 1882, when he removed to Evansville, Wis., which was his home for the remainder of his life. In January, 1851, he was married to Miss Ellen A. Woodbury of Cooksville, Wis. For the last fifty years, these two journeyed together along life's highway, getting the experiences, the joys and the sorrows of married life as only two who are harmoniously united can gain them. There were three daughters who came to gladden this home. These daughters are now living: Mrs. Van Patton of Madison, Mrs. Campbell of Madison, and Mrs. Curry of Minnesota. He passed to the life beyond December 5, 1901, just as the evening shadows were creeping over the land. He had been feeble for several weeks, but not so much so as to be confined to his room, nor so much so as to give his friends any uneasiness with regard to his condition. On the day of his going away, he seemed very much better and worked a little among his plants and flowers, and also entertained callers. In the afternoon the dread messenger came, suddenly, swiftly, without a moment's warning, he answered the summons.

The funeral services were held at the home on Sunday,

December 8th, at one o'clock, Rev. W. M. Short, pastor of the Congregational church, officiating. At two o'clock, the Masons, of which order he was a member, took charge. The casket was covered with white roses and white carnations, the gifts of loving friends, and, in the midst of the falling snowflakes, we laid to rest the earthly habitation of one who had wrought valiantly for his fellowmen.

Mr. Hoxie was of Quaker ancestry, and from them he inherited the strong, sterling qualities that made him the strong, positive character that he was. He possessed a power that perhaps few in this world do possess, and he possessed that power in an eminent degree—that was, to touch the lives of those with whom he came in contact, to nobler, finer issues, and there are a great many in this state today who can reverently and truthfully say, "I owe all that I have made of myself to the influence that Mr. Hoxie exercised over my life." I can tell you interesting stories of little waifs that he took into his home, boys that perhaps no one else would ever think it could be possible to take, and tenderly care for them, and he gave them an inspiration that has gone with them all through life, and they are in the community today, living good lives, striking examples of what man can do for his brother man if he so wills it.

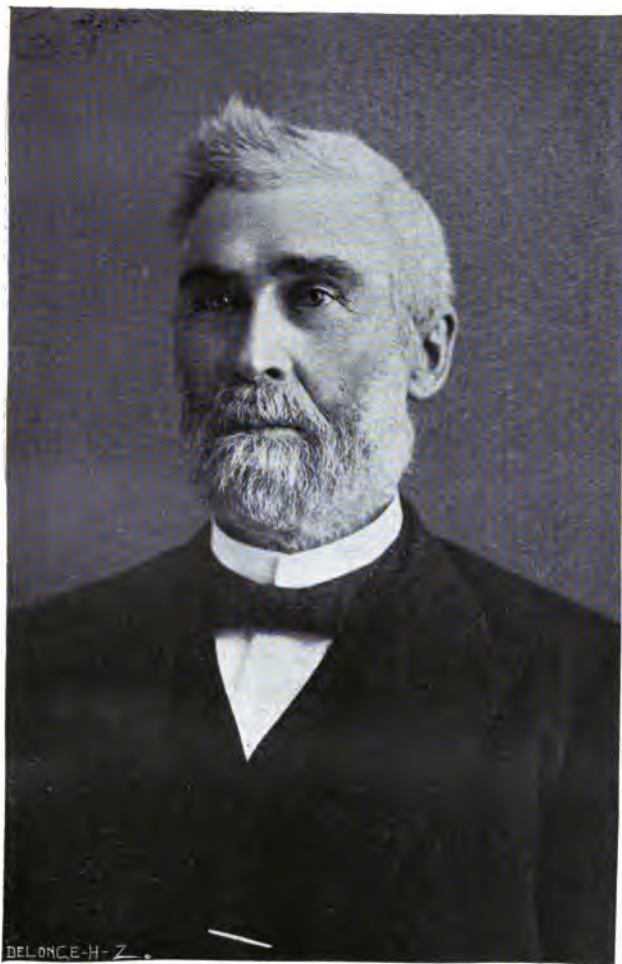
Mr. Hoxie was by profession an architect and builder, and all through this state are standing today public buildings and homes that he has designed and that he has builded. The last work of his life and perhaps the work that made his life shorter than it would otherwise have been among us, because he drew so largely upon his resources, he drew so much from his life's bank account that there was little left to build upon when disease assailed him, was a beautiful modern little cottage in Evansville, very near his own residence. While he was an architect and builder, he was a very fine workman; there was nothing in the range of cabinet work that his skilled hands were not competent to make, and there are a great many pieces of furniture in the homes of the immediate family today that bear the imprint of his handiwork. While he was an architect and a builder, that was his vocation, he always said every man should have an avocation, as well as a vocation, and so

for a great many years horticulture and floriculture were his avocations; and I well remember years ago when some of his friends were talking about placing his name as a candidate for secretary of this society, I well remember how some of the old members very gravely shook their heads, and said: "I am afraid that it will not be for the welfare of this society, if it be placed in the hands of such a man, for I am afraid that he is a theorist, that he has a theory which he has not gained by practice." But those of us who have known him so long and so well, knew that, while he had a theory, that theory had always been worked out by practice and by experience. He delighted in the growth of fruits and flowers. He was a born horticulturist and a born florist. He was very successful in whatever line of work he put his hands and his efforts to.

The influence that he exercised in molding the character of the communities in which he lived was something remarkable. I heard a very prominent townsman say a few days ago in my own town, that there was something phenomenal about Mr. Hoxie, that while he lived in Cooksville he wrought for the elevation of the people in that little place, and it was said that it was seldom that a man who lived in a place so long had wrought into it so much of the purpose of his life; we felt after he had removed to another place that he could not do the same work again, but he did, and he exercised the same influence over the community in which he spent the remaining years of his life, as he did in the little town of Cooksville.

His sense of justice to others was very keen; he was just to the last degree, and I sometimes think if he had a fault, that perhaps was his fault, that he was perhaps too charitable a great many times, and I remember in a memorial address which he gave before this society—I think two years ago—when speaking of a character, of one who had not perhaps lived quite up to the highest mark of his manhood, who had not done perhaps quite as much for himself as it had been possible for him with his opportunities to have done, he said so kindly and I quote from his address: "Why is it that we are dumb in the praise of man until death has put his seal upon his senses and then we stand around his bier and there proclaim

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B. S. HOXIE.

1875

our affection,, our regard for him, as we would not think of doing while he lived? There are many of you, my friends, many of us whose whitening hairs and whose deeply penciled wrinkles year by year are proclaiming to all the world that time will soon cease for us; we will soon be made the targets of that archer who finally comes to all. May not this thought teach us that now, today, tonight, is the time to have a broader and deeper, purer and holier charity for all friends who live?" These words emphasize the large heart of his nature. He was a man who never held a grudge. I remember several instances in which those who were less kindly disposed than he was, who had done him injury, and I remember, too, that he never censured those people, he always had some excuse for them,—it was either, he was getting old and childish, or, he was young and thoughtless; but he was always ready with an excuse. He was always ready to forgive and forget.

We have a great many things to remember Mr. Hoxie by, and just a few days before his going away, he talked with me about the plans that he had in mind for the advancement of this society, and I think the Wisconsin State Horticultural Society and its interests were dearer to him perhaps than any other society of which he was a member. He loved it and wrought for it, and labored earnestly and faithfully for it with never a thought of personal gain or personal advancement. In that respect I think he was one of the most unselfish men I ever knew. He was never a man of whom it could be said, "He has some ax to grind."

Through his efforts legislation was secured for Arbor Day in Wisconsin, and for the better preservation of our forests. He has been president of the Wisconsin State Forestry Association since its organization. From one of his addresses, I quote the following: "And so trees, forest and woodland, always claim my earnest thought, and the wanton waste and destruction of the forest growth without proper regard for the perpetuity of some portion of it, is worthy the consideration of the philanthropist and statesman.

Of his political preferences, it may be said that he did not always vote with the popular party. He was a man who stood

firm and staunch for principle, and he never made a compromise. He believed that the office would seek the man, because of his especial fitness for that office. He was a man who had a deeply religious side to his nature. He was a Christian in the truest, broadest sense of the term. To do good, to be manly men and womanly women,—these were some of the tenets of his faith. He believed that God is, and that we are His children, and it is the life a man lives, the character he develops and maintains that shall determine his standing in this world and the world beyond. He was not a member of any church, he was larger than any church or any creed, and yet he was always seen in church and his best efforts were given to furthering the work of the church where he attended. He wrought for the young and for the old, and many a lad and lass took their first lessons in temperance in the little Band of Hope organized by Mr. Hoxie, and got their first ideas of living a true life; and in many a home today, hanging in some little room, are the little framed certificates of the Band of Hope with the pledge that some boy or girl has taken, and those boys and those girls treasure those little framed certificates very highly. He believed that every man through his own nature has access to the God of love and truth, that in the realm of conscience the individual is supreme. Not only through his own nature has every man access to the God of love and truth, but to the same God of love and truth there was access through every fact of creation, in every truth that is in the world apart from us, in every life that, outside of us, lives in the world; all true science being a true knowledge of God; God revealing Himself in all His creation as a grown man is more and more able to understand it. A fact to him was as sacred as a church, and the truth or life that fact enshrined, as sacred and holy as anything could be. His religion was the religion of humanity. The essence of religious life as he saw it was just that brotherliness of the good Samaritan, helping the near need, attempting healing for the open wound, not speculating about God, not praying the idle prayer, the prayer of lip service, but loving and serving Him, as we love and serve our brothers, with the wisest and busiest life we can command. We could not enrich God by giving unto Him, nor impoverish

by withholding from Him; but faithful to our full duty, we could enrich men; faithless in that duty, we do impoverish our brother, robbing him of some of the fullness of life. We cannot injure God, but as we injure man; we cannot serve God but as we serve man; we cannot love God but as we love man; we cannot understand God but as we, in loving our brother, understand man. His religion, then, was the new one, and yet not the new, because it is said by the disciples of Jesus, "If we love not our brother whom we have seen, how can we love God whom we have not seen?"

Such men as he, I think, help us toward the secret of God's creation, and may the lessons that he has left us sink deep into our hearts, to lift into many a personal nobleness, as sunshine sinks into the heart of the sod to lift again into violets and lilies and roses. We too much associate human life with material achievements, how much money gathered together, how used? How much learning acquired, into what great books or inventions wrought? This has been the hurt of the world always. Those who did some great thing, as the world calls "great," were the ones who are pointed to as examples worthy of commendation and worthy of our greatest admiration. Right it is to fill up our days with all brave and truthful doings as opportunity may open about us, but after all the spiritual worth of the word or deed is in the man whose life is the best expression of the divine love and truth that blesses the world.

I remember hearing Mr. Hoxie say, last winter, that he had never missed an annual meeting of the State Horticultural Society since he became a member, which was at an early period of its history. He nearly always sustained official relation to it, serving as its secretary for six years. He talked with me a short time before.

To him life was always full of possibilities, and he was ever ready to avail himself of its opportunities. Although he had lived longer than the allotted "three score years and ten," he never grew old, the active mind sounded no weak note to tell of declining years. The world has great need of such characters, and because of it we sorrow for his departure.

Those who were privileged members of the home circle knew

best the kind heart, the active mind that planned and wrought
so unselfishly for others.

"I cannot say, and I will not say
That he is dead.—He is just away!

With a cheery smile, and a wave of the hand
He has wandered into an unknown land

And left us dreaming how very fair
It needs must be, since he lingers there.

And you—O you—who the wildest yearn
For the oldtime step and the glad return,

Think of him faring on, as dear
In the love of There as the love of Here;

Think of him still as the same, I say:
He is not dead yet, he is just away."

Prof. E. S. Goff: When our Secretary asked me if I would be willing to say something at the memorial service of Mr. Hoxie, I thought a moment and I told him I should be happy to do so, because when I came to think about it, it seemed to me that there was as little that need to be passed over in speaking of Mr. Hoxie's character as any man of my acquaintance; I felt that to speak my sincere thought of the man would be to speak his eulogy. There was nothing so far as I could remember that I need forget. I remember when I first came to Wisconsin, I had traveled thirty hours, was tired and did not sleep very well on the train; I went out to a farmers' institute and began to feel some very perceptible symptoms of homesickness; I was a thousand miles away from home among strangers, I was about to undertake a work of which I knew very little, and I wondered whether I should succeed or not, but a gentleman came up to me, introducing himself, as he put out his hand I noted the frank sincerity with which he took my hand, he sat down by the side of me and began to talk; I looked into his eyes, I saw they were sincere, I noticed his manner was unaffected, I saw right away that he was going to be my friend, and I thought to myself, "If

this is a specimen of Wisconsin people, I have nothing to fear." This man was Mr. Hoxie. I can say with perfect sincerity that after eleven years of acquaintance with him, I never had occasion to change that impression. I always found him simple, kindly, unaffected, sincere. It happened that I was associated with him quite frequently in his work in connection with this Society, and in different places at different times, sometimes by night, sometimes by day, sometimes in traveling; while he was connected with the World's Fair, we were brought together very frequently during that year, sometimes in Chicago, sometimes at his house, sometimes here; I always found him the same, always kindly, unprejudiced, sympathetic, honest, and I suspect that that is the impression that most of us have. It seems to me that very few men with whom we have had association have so few critics, that is, so few unkindly critics as Mr. Hoxie. While he always was quiet, never obtrusive, all that he did was done from the best motives. Mr. Hoxie was a horticulturist. He told me at that little interview of which I spoke that he was not a horticulturist, that he was a carpenter; I have changed my mind, I feel that he was a horticulturist, although his life work was carpentry, he was a horticulturist in the same way that Dr. Holmes was a poet, we hear very little of Dr. Holmes as a physician, we hear a great deal of him as a poet; we hear much more of Mr. Hoxie as a horticulturist than as a carpenter, although as a carpenter, as Mrs. Campbell has said, there are hundreds of homes that can testify to his native skill.

Mr. Hoxie was a Christian citizen, he was not a man that made much noise, not a man that was ambitious in a sense of seeking self promotion or aggrandizement, but a man who was always ready to do his duty. The last communication that I had from him was a newspaper article which he sent me in which he had been grappling with the force of the illegal liquor selling in his native town, and Mrs. Hoxie told me afterwards that that was one of the troubles that irritated him much in his latest days, but he stood firm for what he believed to be the right, and although it was a task that brought him many kicks and nothing in the way of compensation, he did not shrink from it, he did it because it was the right thing to do.

Mr. Hoxie, as a religious man, was very liberal, very sincere

and very broad-minded, just as Mrs. Campbell has said. He believed in integrity as the means by which men reached the eternal life. I suspect that Mr. Hoxie is one of that noble army of men who have not figured largely in the events of his time, but he has been faithful in a few things and has done his duty when he saw it, and to the best of his ability. I suspect there are few men that have fewer enemies than Mr. Hoxie had and that there are few men who will ever remember anything against him.

Mr. G. J. Kellogg: Mr. President and Friends, when I look at this array behind me, the question comes, who will be the next, next year upon this wall? There will be some one there. I have caught myself looking through the audience with the familiar faces of our faithful friends since I came to this meeting. When I heard what Mrs. Campbell said, the thought came to me, "Why could not we have had that address twenty years ago, ten years ago, five years ago, that we might have appreciated him as those who knew him best did appreciate him?" While I have often met him, and hardly ever met him anywhere else, except in horticultural work, I really knew not his worth, I think there is none of us that knew his worth. I believe that we should tell our friends their good and their noble qualities while they live, and not have so much to say about them after they are dead. Cheer your friends, cheer your friends while they live. I have never known aught against our departed friend. I have ever known him in that even tenor of his way, but really very few of our audience or our horticultural members ever knew the worth of the man. I have regretted very sincerely ever since I heard of his death that we had not made him President of this Society while he lived, he would have been an honor to it. The younger men might have waited for the honors, but he is gone, may his mantle rest upon us.

It was moved by Mr. Philips that the picture of Mr. Daniels be presented to the daughters of Mr. Daniels; also that the picture of Mr. Hoxie be given to the family of Mr. Hoxie, to Mrs. Hoxie while she lives, and then to the daughters, who were present in the audience. The motion was seconded by Mr. Kellogg, and carried.

Mr. Philips: As Mr. Elliott has come from Minnesota to

our meeting and has been one of the earnest workers in that State for the last thirty years, I would like to have him say a few words about his co-workers, Mr. Harris and Mr. Lyman.

Mr. Elliott: Mr. President and Friends in Horticulture, I shall never forget one cold dreary day many years ago when I first met John S. Harris at a State Fair in Rochester, Minnesota. That was more than thirty-five years ago, when he exhibited the first apples that I had ever seen placed on exhibition in Minnesota. Since that time I have been in constant work with him up to the time of his death, and he has been a guiding star to the cause of horticulture in the Northwest. He has been constant in season and out of season, always trying to do something in the interest of horticulture, and when we learned of the death of Bro. Harris last March, we were very much grieved, we thought then that we had lost one of the props of our Society. And when we laid him to rest on that March day we thought and knew but little of what we know now of his life work. We made a discovery then that we were not aware of, that he had presented to us a book to which he had devoted many hours, many days, yes, months, in outlining seedlings and varieties, and writing descriptions that we shall always prize very highly in our horticultural library, and when I have visited his place and seen the work that he has done and see what he has left as a monument of his work in that experimental orchard, I shall always hold in dearest remembrance the life of John S. Harris.

Now, turning to this picture here, Mr. H. M. Lyman, we have not been so intimately connected, but he has left a monument to his name in the lot of seedlings that are many of them yet untried, but which we think there are great hopes of proving very valuable to our State. As has been remarked, these two gentlemen were both Christian gentlemen and they lived near to their Maker, and we hope and trust that they have received their reward, and that we shall always hold them in the dearest remembrance.

Mr. W. J. Moyle: I was deeply impressed by the remarks made by Mrs. Campbell in regard to Mr. Hoxie. I presume if it had not been for Mr. Hoxie, probably I should not have been here this evening. I recollect when I was a little fellow in my teens going to Milwaukee to attend a State Fair and I was walk-

ing around in the Horticultural Building, and there for the first time I met Mr. Hoxie. He inquired where I lived and what I was doing, and I asked him where I could get the reports of the State Society, and he told me what I would have to do and he was quite interested and said to me, "Why cannot you come up to Madison next winter?" Remember I was nothing but a green country boy in my teens, and yet he questioned me and took an interest in me. I said, "I do not know anything about this horticulture," but he said, "You are a young man, and we have not got anybody from this part of the State, I will write you a letter later." I thought that was a little bluff, and I never expected to hear from him again. I left the State Fair and went home, and in due course of time I got a letter from Mr. Hoxie and at his request I came here and I presume my being here tonight is largely due to the fact that Mr. Hoxie took such interest in me at that time.

The President: The hour is getting somewhat advanced, and I presume all have spoken who wished to speak, and I suppose we would better adjourn. I wish to thank you all for your courtesy and kindness to me, and I feel very much encouraged over the attendance and the interest that has been manifested here in the excellent papers from our own people and from abroad.

LOCAL SOCIETY REPORTS.

Report of A. J. Van Epps, delegate from Waupaca Horticultural Society and Improvement Association:

Our society consists of about twenty-five families. We hold meetings in both city and country places, usually collecting from 50 to 250 people at a meeting. We collect 25 cents annual dues from the head of each family. Usually have picnic suppers and always have an interesting program.

Usually hold a winter fair and pay small premiums on fruits and vegetables. We do not have stated regular meetings but arrange to meet at convenient times and places.

Our society is doing much good in the way of encouraging the

culture of fruits, flowers, etc., and encouraging the younger members of the families to read and talk in public.

We have elected the following officers for the ensuing year:

President—A. D. Barnes, Waupaca.

First Vice President—Mrs. Robt. Pope Lind.

Second Vice President—P. A. Ham, Crystal Lake.

Third Vice President—Hollis Gehn, Lind.

Secretary—W. H. Holun, Waupaca.

Treasurer, M. R. Baldwin, Waupaca.

Respectfully submitted,

A. J. Van Epps,

Delegate.

Appleton, February 3, 1902.

Report of Grand Chute Horticultural Society:

Our Society is holding its own in regard to interest and membership. Total membership, 65. Officers: C. A. Abbott, President; Wallace Robla, Vice President; Mrs. John Finkle, Secretary, and J. P. Buck, Treasurer, were elected.

We hold four regular meetings each year. Our members feel that it would be a matter of much interest to our meetings if an officer of the State Society would occasionally visit us.

Edwin Nye,

Delegate.

Report of Algoma Horticultural Society:

Our Society has held its monthly meetings regularly thro the past year. Attendance has been good and interest increasing. We held a rally in November when President Loope and Mr. Hatch were with us to encourage and advise. At our annual meeting, January 18, the following officers were elected for the ensuing year: President, M. V. Sperbeck; Vice President, Geo. Jones; Secretary, H. C. Christensen; Treasurer, Mrs. Seymour Smith. Delegate to Winter Meeting, Lester Athearn.

Report of Omro Horticultural Society:

The Omro Horticultural Society held its annual meeting January 10, 1902. The officers elected for the ensuing year are as follows:

President—A. B. Frees.

Vice President—W. J. Jenkins.

Secretary—Mrs. Jos. D. Treleven.

Treasurer—Mrs. Mamie Stead.

Executive Board—W. P. Bussey, Mrs. Geo. Buck, Mrs. E. Stead and R. T. Darrow.

We elected A. B. Frees as delegate to State Meeting and W. P. Bussey, alternate. We report a membership of 86 besides having a large attendance of young at nearly all meetings who take part in our programs and appear to be interested in the work. There have been twelve meetings held during the year besides a Strawberry festival, also a Chrysanthemum show and Fair which proved a success in every feature.

Mrs. Jos. D. Treleven,
Secretary.

The Rushford Horticultural Society met at Eureka, January 4, 1902, and elected the following officers:

President—W. H. Becker.

Vice President—Mrs. E. Franklin.

Secretary—H. H. Bradt.

Corresponding Secretary—Mae Bradt.

Treasurer—Mrs. E. Peniman.

Our meetings are held the first Saturday in each month. Have twelve state members and among them is the President of state society. Our topic for our March meeting is the Farmer's Garden and Floral culture. Our aim is to do better each year.

W. M. Hall,
Delegate.

Route 2, Berlin, Wis.

Report of the Sauk County Horticultural Society:

At the annual meeting of our society held in December the old officers were reelected, viz.—

President—Wm. Toole.

Vice President—Chas. Hirschinger.

Secretary—C. L. Pearson.

Treasurer—Mrs. E. Marriott.

Our society expressed by vote a desire that Wm. Toole continue a member of the executive committee of the State Horticultural Society. C. L. Pearson was selected as delegate to the State meeting at Madison.

A two days' meeting held in the court house in Baraboo last February was profitable to all who were fortunate enough to be present. Among those who delivered addresses were L. G. Kellogg, J. L. Herbst, Supt. L. D. Harvey, W. N. Bible, N. Darrow, J. J. Menn and Dr. J. E. De Wolf.

C. L. Pearson,
Secretary.

RESOLUTIONS PASSED AT WINTER MEETING,
FEBRUARY, 1902.

Resolved, That while we are grateful for the cordial relations existing between our society and our State Experiment Station, we feel that neither our society as a whole nor its individual members have shown sufficient interest in the work of the station nor have they expressed their wishes as to the policy of the Horticultural department as freely as should be done. Therefore we request that our Experiment Station shall give more attention to the suppression of insects, pests and plant diseases to the extent that our orchardists may receive from the station such assistance and advice in combatting these pests as is given in other states.

We urge that an experimental orchard be established on the station grounds or at some point near Madison under the direct supervision of our State Horticulturist for the purpose of testing the hardiness and other qualities of the many promising seedlings now coming to our notice.

We heartily appreciate the work which has been done at the station in testing the adaptation of various kinds of ornamental trees and plants and we ask that our State Horticulturist be given greatly increased facilities for carrying on the same work.

Whereas, The Wisconsin State Horticultural Society has become a great factor in the industrial progress of the State and we believe that we should receive recognition commensurate with our work,

Resolved by this Society, That the Governor be requested to set apart a suitable room in the Capitol building to be designated as a permanent home of this society.

Whereas, The Wisconsin State Horticultural Society has received many benefits through the eminent horticultural abilities of H. E. Van Deman, not only in connection with our exhibit at the Pan-American Exposition but also in planning for the same and at other times,

Resolved, That we ask the Louisiana Purchase Exposition Commission to make use of his valuable services in promoting the Horticultural interests of the Exposition.

Resolved by the executive board, That the Wisconsin State Horticultural Society recommend that an exhibit of fruits be made at the Louisiana Purchase Exposition, providing sufficient encouragement and funds be awarded the society by the Wisconsin State Commission.

Further be it resolved that the Executive Committee be requested to ask for not less than \$2,500.00 for the purpose of making said exhibit.

Resolved, That all ex-presidents and ex-secretaries of our society be made honorary life-members.

Resolved, That in consideration of the valuable aid and encouragement given to the Wisconsin Horticultural Society by Andrew Kreutzer and Daniel E. Riordan, that it be the sense of this meeting, that they be elected honorary life members of this Society.

Whereas, It has been deemed advisable to amend the constitution and by-laws to conform to the present conditions, be it

Resolved, That the president be empowered to appoint a committee of three members of this society to make such changes

as may serve the best interests of our society, and report at the next annual meeting.

Resolved, That the members of the Wisconsin Commission to the Pan-American Exposition, including Secretary Ham-bright, be made honorary life members of the Wisconsin State Horticultural Society.

Resolved, That the State Horticultural Society sends the greetings of the members in annual meeting assembled, to our honored and beloved members, J. S. Stickney, A. G. Tuttle, F. S. Phoenix, and F. C. Curtis, and kindly inform them of the regret expressed by each and all at their inability to meet with us.

Resolved, That we make Mrs. B. S. Hoxie an honorary life member of the society.

TRANSACTIONS
OF THE
Wisconsin State Horticultural Society.

ANNUAL SUMMER MEETING.

WAUPACA, JUNE 25-26, 1902.

The meeting was called to order at 2 o'clock P. M. in the City Hall by the president, Dr. T. E. Loope.

The invocation was offered by Rev. L. D. Hopkins, rector of St. Mark's church, Waupaca.

An address of welcome was then delivered by Mr. A. D. Barnes of Waupaca.

ADDRESS OF WELCOME.

By. A. D. Barnes, Waupaca.

Mr. President, Members of the State Horticultural Society, and Friends:—It is with pleasure and pride we have the honor to welcome your association again to our cozy little city, our rural homes, our gardens and beautiful Chain-o'-Lakes. We feel that your visit with us four years ago must have been congenial, pleasant and inviting, or surely you would not have given us this pleasant return so soon. We feel honored for this your happy return, and we are glad indeed to open unto you our gates, our doors, our gardens and orchards (and especially our neighbor's cherry orchard across the street, where

you all may participate and be happy). I need not dwell upon the welcome part of this address, for you all know my words would be inadequate to express our cordial greetings, which I trust our actions will best express. We hope and trust that we have so planned, arranged, planted, cultivated, trimmed, trained, or so cared for at least some parts of our entertainment,—our gardens, orchards or nurseries,—that some of you will have learned something, heard or seen something to be admired, or at least feel inspired to excel our efforts on your return home. We know you will impart and express some practical suggestions and lessons that will influence us for good and better our future efforts in our chosen vocations, in our social home relations, and our everyday life.

We are indeed proud of our calling. We believe it is the best, noblest, and grandest manual labor man can engage in. We believe that the care of flowers, shrubs, gardens, trees and fruits, brings the participant into closer communication with the deity than does the pursuit of any other vocation to me known. What greater reward can we ask? It is the hope and inspiration of my life that our boys shall adopt this calling and excel us in every laudable undertaking,

For all the discouragements, disadvantages,—frosts, blight, rust, parasites, insects, sun scald, drouth, deluge and disasters,—that we are doing good, that our efforts are appreciated, that our examples are being followed, our precepts taught, and that for all our untold discouragements we do feel grateful indeed, that it is our chosen vocation, our calling, so to speak, and our happy lot to have been cast into this paradise, as it were. For only a few short years ago, this was the Indians' land. Poor Lo! I do not blame them, that they wanted not to go. Kindly bear with me, please, while I review the past in a few short words.

Waupaca county is not old, yet we possess the three largest apple-trees in Wisconsin; all three of these are seedlings, and the planters of at least two of them are now within the hearing of my voice. We have originated more seedling apple-trees worthy of propagation than all the rest of the state combined. Our crab seedlings are par excellence. The far-famed Ancient Briton blackberry was discovered in its native home

within our borders. Our seedling strawberries are second to none. Our apples have won the very highest honors and been the center of admiration at all the great shows of America. Our ground apples (Waupaca potatoes) are world famed.

We have one of the oldest and best attended societies in this glorious state. What more could we aspire to? But, ah, ponder a moment. Only thirteen years ago this very week in this beautiful grove, was organized our society. At this meeting were present: Ex-President J. M. Smith, Wm. Springer, D. Huntley, B. S. Hoxie, and Professor E. S. Goff, who were most active and enthusiastic workers and gave us kind assistance, advice and encouragement. But, alas, all are gone. What a solemn warning! Who next? Who is willing and ready? Let us bow with humble devotion while we mourn for these departed, these fine, grand, noble, inspiring self-sacrificing brother horticulturists. They are gone. But their memories are written on the white stone, and their good deeds and kind words should be held ever sacred and inspiring to us. Let us by these tokens take warning, and vow unto each other that it shall be our aim and object in the future to be more friendly, more considerate of each other's welfare, say more good things to and of each other while they live, that they may hear some praise for their efforts, that they may know they have a place and are appreciated in this glorious world of ours. This surely will inspire us to better thoughts, better deeds, and higher inspirations. Friends, I have sometimes thought it would be really nice to die, for I am sure someone then would say something nice, true and good for me. It matters not how little we have been appreciated in our life's work, how little encouragement we may have had; once we are dead, our praises loudest sang. Pardon, please, these solemn thoughts, for I must make some impressions on your minds, else this my maiden address would be forgotten.

Friends, accept our greetings; make yourselves at home. Take everything you can carry except the grind-stone, kitchen stove and the hired girl. Come again and have a good time. If out of homes or vocations, come and locate with us. I believe no better opportunities are offered for this vocation, either for pleasure or for profit, than does our county afford; and

further, I do believe there could be more money made here in fruit growing for the amount of capital, labor and attention bestowed in the business than can be made in any country in our union.

Pardon digressions, please. Accept our greetings, with the same cordiality it is our desire and purpose to extend them, and may God bless you all.

RESPONSE.

Dr. T. E. Loope, President.

Ladies and Gentlemen, and Members of the State Horticultural Society:—It is expected at this time, I presume, that I should address you in answer to this address of welcome. Now, I am a man of but very few words, and I do not wish to take up any valuable time.

I can assure you that we are very glad to be here in the city of Waupaca and to see the faces that gathered here to welcome us, and to partake of your good cheer as we have been doing.

I wish to say further that I believe the State Horticultural Society is an organization that is banded together for the purpose of doing the most good that possibly can be done for the state we represent, and that in so doing we are practically a unit. I believe our state society at present is in full harmony, and our sole aim and purpose is to do the best for the state of Wisconsin that can possibly be done in our line of action, and I am very glad that in that action we are united and unanimous. It is an unpleasant thing for any organization to have different interests clashing. I believe at present we are more in harmony with one another concerning the interests and the workings of the society than we have ever been before perhaps in the history of the society. I am very proud to say this because I happen to be at the head of the society at this time. I am very grateful to the members of the society for the cordial and earnest support they have given me, more so than I can express in words.

The hour for beginning our work is at hand, and I do not believe in making extended remarks at this time. At some future time, if you wish me to make a long address, and will give me plenty of notice beforehand, I will get someone to write it and gratify your wish.

The president then appointed the following committees:

Resolutions—S. H. Marshall, Wm. Toole, and L. H. Laiten.

Flowers—Jno. Periam, Jos. Reek, and Mrs. Rich.

Fruit—L. G. Kellogg.

On motion of Mr. A. P. Wilkins, a vote of thanks was tendered to Mr. A. D. Barnes and his handsome and able lady assistants for the substantial entertainment furnished visiting members.

The literary program was then taken up and the following subjects were presented and discussed:

The President: The first number on our program was to have been presented by Prof. Goff. I think all of you will agree that when we lost Prof. Goff, the society, the state at large, and every member of this society personally, sustained an irreparable loss.

This part of the program will be taken up in a general way, and I will ask Mr. Barnes to open the subject, and then an opportunity will be given for discussion.

CHERRIES.

A. D. Barnes, Waupaca.

Mr. President, Ladies and Gentlemen:—I am not on the program for this subject, but I am willing to speak upon the subject if it will be of any benefit to anyone. I have not made a study of the topic for this occasion, but I think perhaps I have a few ideas along the line of cherry culture that may be of some value.

In the first place, always purchase your stock of cherry trees

budded on Mazzard or Mahaleb roots. Never plant a cherry tree on its own roots. It will everlastingly sprout if on its own roots, and the original tree will die. If you plant trees that are budded on Mazzard or Mahaleb roots, they will never sprout, you have nothing to contend with; the trees will keep on growing, and the older the trees get the better they will be for bearing fruit.

Always plant cherry trees deep. Plant them from two to six inches deeper than they grow in the nursery, and from two to six inches deeper than other fruit trees. Usually cherry trees will ripen their wood and shed their leaves much earlier than the apple; consequently, they will enter the winter in good condition.

I would recommend for this section of the state, four, and only four varieties of cherries. I do not think there is anything better for our use as an early cherry than the Early Richmond. The next choice would be the long-stemmed Montmorency, the third choice the Late Richmond, and the fourth choice the late Morello.

Do not make the mistake of having cherry trees grow from sprouts on their own roots. Often the Morello sprouts so that the grower will give them away for the digging. Better pay a fair price and get good stock. I find that cherries will bear more fruit if planted close in quite a large patch or plantation. I believe there is as much profit and pleasure in cherries as there is in any fruit that can be grown. I have trees planted fifteen years, and at least ninety per cent. are still there in good condition, and that speaks well for the cherry.

I would by all means plant the cherry very early in the spring: it is even well to prepare the holes in the fall so as to get them in early. I believe in planting quite a quantity of them so one will fertilize the other. While I think they are all staminate blossoms, I think they will yield a better crop if planted in that way, and it is also a protection against storms, and you will not feed so many to the birds if you have two hundred trees instead of one hundred. If you plant a good many trees, you will have enough cherries for yourself and some for the boys.

I pick my cherries in quart boxes and market them the same

as strawberries. It has been our good fortune to grow as high as two to four crates on one tree, and that means from \$2.50 to \$6.00 from one tree. I do not mean to convey the idea that that is the usual thing, but we have done that. Usually the ordinary crop from trees planted ten years is two crates per tree. My experience has been that they fruit every year; they do not alternate like other fruits.

I presume, Mr. President, this is enough to suggest discussion, and I will leave the subject.

DISCUSSION.

Mr. S. H. Marshall: What is the idea of planting cherry trees so much earlier than other trees?

Mr. Barnes: The roots of the Mazzard and the Mahaleb are most peculiar. They practically grow on buds, and they must be planted on moist soil. They have no little fibres like apple and crab trees.

Mr. J. J. Menn: What soil is best for the cherry?

Mr. Barnes: The best soil is a sandy soil; a surface loam with clay subsoil. You can grow cherries in any kind of soil you can grow other fruit in. They will not thrive in black muck or in sand that is good for nothing but plastering; otherwise they will do well in any kind of soil.

Mr. Frederic Cranefield: Have you any device for picking?

Mr. Barnes: No, we pick by hand. I don't know anything about tools for picking. We have never used any tools. Our crop is small, only from one to three hundred trees each season.

Mr. Marshall: I would like to ask Mr. Kellogg whether he has seen any device to cut the cherries?

Mr. L. G. Kellogg: Some theorist told me a few years ago that placing a sheet under a tree and cutting with shears was a very quick way of harvesting cherries. I made arrangements for a picker of that kind and found it not a very satisfactory way, so we are picking by hand.

Mr. Fairbanks (Mich.): I have seen cherries in our town with the stems cut about half way up, and on inquiry I learned

there was some kind of an arrangement which they placed underneath the tree,—a basket of some kind,—and then the cherries were cut and dropped in the basket. That was used quite extensively.

Mr. Barnes: I presume in Michigan the fruit ripens earlier than it does with us. Here, we find from three to five cherries on a cluster, and if we were to cut them all off at once we would cut some green ones. Do not pick cherries until they are ripe. If you pick them when a little green they will shrink and it will injure the tree. When ripe they come off very easily and in the right place. We always pick our trees over twice and sometimes three times. If you pick them but once, some will be too green.

Mr. Marshall: Do you pay the same for the second picking as you do for the first?

Mr. Barnes: The same price, one cent a box.

Mr. Marshall: I would like to ask Mr. Barnes why he recommends the Late Richmond?

Mr. Barnes: It is later than the Early Richmond, it is equal in my opinion to the Early Richmond, it is larger, about the same color, and some prefer it because it comes two weeks later and is a little larger.

Mr. Marshall: Is it equally productive?

Mr. Barnes: Yes; my Late Richmond are young trees; this is their first bearing season, and I think they are doing fully as well as the Early Richmond. I want to give you people an idea: if you want to plant only one or two or three cherry trees, plant from one to three Russian mulberry trees close by them so the birds will take the mulberries and let the cherries alone. Don't ever attempt to kill the birds, because they are the best friends you have on the farm. If you plant mulberries you will find the birds will let the cherries alone.

Mr. L. G. Kellogg: I had for eighteen years some Late Richmond cherries, and out of about twenty trees I do not think any one of them produced any year over six quarts of cherries. It is an entire failure with me, and I cannot recommend it. I think there are other varieties much better than the Late Richmond. The cherry is large, but it is not very

productive. I would prefer the Early Richmond, the large Montmorency, the Ostend and the English Morello.

Mr. Barnes: That is where a great many differ. I believe our friend Kellogg is right in his statement, and I believe I am right. As I understand it, Mr. Kellogg is located in a deep, rich soil. On my ground, the Early Richmond trees are on a sandy soil, rather poor on the surface. I believe if they were grown on rich soil they would blight, but on poor soil they do not, and they fruit better on poor soil than on rich. We must take all these things into consideration.

Mr. Wm. Toole: When I looked through the experimental orchard I noticed that there were a great many vacancies, and I saw some trees that were showing up well. I saw the Dyehouse cherry, the Late Morello, the Orell and some other varieties not making any showing this year, and I wondered if in these kinds they experimented with there were any they recommended to be added to our list.

Mr. Cranefield: We have a number of varieties in the orchard besides the Russian varieties; those were largely obtained from Prof. Budd. The Orell 19, 23, and I do not recall the other numbers; then we have also the Cromwell, the Late Morello, Shady Morello and the Dyehouse. We have not been very favorably impressed with the Russians as a whole. They have not been productive; they are splendid trees, make a good growth, but they have no cherries. The Orell 23 that Mr. Toole speaks of is probably as good as any of them, as it seems to be hardy, of good size and very productive. Leaving aside the Russians we have been much pleased with the Dyehouse. Just at the present moment I do not recall its history, but I think it was picked up somewhere in Illinois. It seems to make a good growth, is quite productive, and has all the qualities of a good cherry. It has been fruited with us for two or three years. We would not want to recommend it unqualifiedly, because we want to see more of it.

J. J. Menn: With a good crop of cherries, how many quarts can a picker pick in a day? It is rather difficult to find cherry pickers when the crop is scattering. I have never paid 16 cents a crate until this season, but I told them this season I would pay 16 cents per crate. The right way to pick is to use a high

saw-horse with a small step nailed on the end to get on. When the crop is light, almost anything will do.

Mr. S. H. Marshall: It has been my experience that you cannot get good cherry pickers to pick for 16 cents a crate, particularly for the last picking; I had to pay 25 cents per crate. I want to answer Mr. Cranefield in regard to the Dyehouse cherry. I got from Mr. Hitchcock five years ago a half-dozen supposedly Dyehouse cherry trees. I have never seen one cherry that matured; they all died before they had a cherry on them. Every one of them was winter-killed.

Mr. Barnes: Our friend Cranefield said they all died. You bet they did. I planted Wragg and Orell and everything else, and I have not got a single tree of those Russians growing. I have paid out lots of good money for Russian cherry trees of the best varieties, and they have been an absolute failure, or else I was an absolute failure. They are all dead and gone, but those four varieties I mentioned are all right.

Mr. Fairbanks (Mich.): I would like to know if anyone has had any experience with the Louis Philippe?

Mr. Barnes: We cannot grow sweet cherries here.

Mr. Fairbanks: I had a little experience with it in Michigan. Of course, Michigan has a more moderate climate, yet we have difficulty there with our sour cherries. The Louis Philippe ripens between the Early Richmond and the English Morello, and it is a larger and finer cherry than either of those, but the tree does not bear while it is young. Years ago I bought a large amount of them in New York, and planted them in Michigan, in the northern part. They were planted along with the Early Richmond, the English Morello, and that class of trees, and the English Morello planted at the same time are more than half dead, while not a tree of the Louis Philippe has played out. I find that to be the case through the country. It is not so south, it is a vigorous grower, and is as hardy with us as the English Morello, and when it gets to the proper age is more productive than the Early Richmond.

A PLEA FOR MORE EXPERIMENTAL WORK IN HORTICULTURE.

By Frank Stark, Randolph.

Horticulture, the higher walk of agriculture, as it were, has been and still is to an uncertain extent one of the most pleasant and sometimes most profitable methods of tilling the soil. Our chief thought seems to be the profits we hope to obtain, without due regard for the other fellow's pleasure or pecuniary interests. We study and scheme and gather all the information possible to carry out our own plans until the chap whom we might "boost" a little is forgotten. If a neighbor sets nothing but pistillate strawberry plants, we feel mighty mean clear down in our boots to think how he should have been told about such little things. We must not sow the seed of charity in the hardpan of ignorance.

If farmers are to take advantage of the many good things offered by the experiment stations, experimenters at large, nurserymen and seedsmen, they must know they are right, then go ahead. Our little magazine, *The Wisconsin Horticulturist*, would do an infinite amount of good if it had twenty times its present circulation. It has proven itself a boon to cultivators who were troubled with "horticultural imbecility." It would also increase the membership of the state society. The agriculturists should be educated through the medium of this valued periodical as well as other publications, so that they would know how to make their bushes bear big berries, raise fine fruit from their unproductive trees, and have a good garden. "Oh, that's old," you say; "we have always done that." In many parts of the state, where there are good farms and people appear prosperous, there isn't one farmer in twenty-five who ever saw or heard of the *Wisconsin Horticulturist*!

We should experiment on how to increase its circulation and how to turn the thoughts of the everyday farmer to the best interests of his family and farm. Lots of fruit makes the family happy and keeps the children home. Can a boy think of

a farm where there is plenty of fruit without wishing that he lived there?

While we are "disseminating" information among horticulturists, we ought to give some attention to the granger who has neglected his orchard and garden or has none. The man who sets out trees or small fruits without knowing a blessed thing about what they need (as many do), and thinks to look that up later, is not wise. He generally reaps "a harvest of barren regrets." It's a good thing for the nurseryman though—at first; the fruiter-grower second, I suppose.

We have many experimenters in new fruits and improved methods, but we want more. The stations are doing a great deal, but must not be expected to do everything. But location and character of soil have such an influence over some varieties of fruits that many reports are unreliable, and one must try for himself.

There is a wide field for experimenting with seedlings of most fruits. Prof. Goff believed in improving the wild cherry by natural selection. He started with them not long ago. We hope it will be carried on and look for good results. Anyone can help in this by sending fruit of unusual size and fine flavor, or seed from same, to the station at Madison. There are many questions still unsettled, and new ones constantly coming up. If anyone has reached a happy or any other kind of conclusion, to them, let your light shine out, let the other fellows in.

We can do more for the advancement of horticulture if we try. Let us try.

DISCUSSION.

Mr. Frederic Craneheld: I just wish to speak upon one or two points in the paper, and one is, that I hope that the work with the wild black cherry will be continued. There were many experiments made and data gathered, but they have been laid aside and the work stopped with Prof. Goff's death. There are many things we want to work out, and one is this work with the wild cherry, and I would like to ask for your

help in this. You can help us much, especially in this part of the state, because you have here good specimens of the wild black cherry. The size of the fruit is one thing to be considered, also the quality, size of stone and flavor of the fruit. We would gladly pay transportation charges for samples of such fruit sent to the experiment station.

Mr. Barnes: What is your object in getting this fruit?

Mr. Cranefield: Our first thought is in the selection and propagating from seed, much on the same plan aimed at in the improvement of the native plum.

Mr. Barnes: Will the seed reproduce its identical species?

Mr. Cranefield: The subject is too new; experiments have not gone far enough. It is our idea to save the seed and plant it of especially desirable varieties of the wild cherry. We were not so particular about the parent tree, but we wished to study its offspring. I am well aware that with our many varieties of cultivated cherries it is almost a hopeless task to try to improve the wild cherry that ranks now as only fit for food for birds, but when we stop to think that many fruits that we think a great deal of now, like raspberries and blackberries and other fruits that have come from the wild, there is some hope for the wild cherry.

Mr. Irving M. Smith: I would like to ask whether this wild black cherry is the kind that grows on strings, or whether it grows single like the common cherry?

Mr. Cranefield: By the wild cherry, I mean the *prunus scrotina*; I do not mean the choke cherry,—that I feel is a hopeless task. The wild cherry grows in racemes. I do not recall any wild cherry that grows singly.

Mr. Smith: We have a few kinds the fruit of which consists of nothing more than a stone with a skin around it and it grows somewhat similar to the currant.

Mr. Cranefield: We have the *prunus pennsylvanica*, the bird cherry, the wild red cherry, the choke cherry, and the wild black cherry. The fruit grows in clusters, and when the tree is full grown it is from forty to seventy feet high. The choke cherry never grows so high.

Mr. Barnes: In this work that Prof. Cranefield has established, I believe we ought all to take an interest. I believe

a valuable improvement can be made in the wild black cherry. I can remember back forty years or more, in front of an old log house there was a wild black cherry tree which bore fruit every year, and it was superior in flavor to many of the black cherries in that section of the country, and if we are careful in the selection and propagation I believe we can establish something valuable.

SUCCESS AND FAILURES OF COMMERCIAL ORCHARDS FOR WEST AND NORTHWEST WISCONSIN.

By J. J. Menn, Norwalk.

The subject assigned to me is an important one. Every farmer, however small his possessions may be, who lives in the fruit growing districts of the United States should grow some of the tree fruits, especially the apple, cherry, and plum. The apple should be found upon his table in some form every day of the year. The city people, and those not having any land to grow fruit upon, must look to the commercial grower to supply them with fruit. It is the purpose of this paper to present briefly why commercial orcharding in Wisconsin should be given more attention, and its success or failures.

In dividing the state, I will take the Wisconsin river as a divide, going as far north as Wausau, then east to Oconto near Green Bay. By looking over the state map, we find two-thirds of the area of our state in this western and northern district.

Statistics for 1900 show that we have 40,905 acres of apple orchards in the state, with 1,338,917 bearing trees; the county of Sheboygan in 1900 had 2,665 acres of apple orchards, with 92,123 bearing trees, being the highest out of the seventy counties of the state for bearing trees; the only counties of the state not having any bearing trees are Forest, Sawyer and Vilas. In all other counties apples are grown, and undoubtedly by this time they grow apples in said three counties. In comparing figures, I find at least three-fourths of the apples of the state are grown south and east of the Wisconsin river.

Although the counties of Crawford, Richland, Sauk, Vernon, Monroe, and LaCrosse make a very good showing, aside from these.

In the western and northern part of the state apple growing is in its infancy, with the exception of the counties lying along the Mississippi river to Pierce county; the northern part of the state is comparatively new, having been covered with heavy timber and owned by land companies. The fine pine and hardwood forests have disappeared, and in place we find fine farms all over the northern counties, with prosperous cities and villages. With the present rush for Wisconsin lands, it will be but a few years before all of the land will be occupied.

Now, can we successfully undertake commercial orcharding in the western and northern part of the state? I would say, yes, and no. I am aware that we have severe winters, and probably never will be able to compete with the southern and eastern apple growing states for number of bushels; but for quality and beautiful fruit, Wisconsin doesn't have to take a back seat, and we can safely show our fruit at any fairs and compete with any state for size, quality and beauty. The compliment of Prince Henry and Bob Evans in speaking of the beautiful women of the Cream city, if they had traveled over the state they would have found them in every village and city of our state; we have the climate that gives the rosy cheeks not only to the women but to our fruit.

The remark is often heard that apple growing will soon be overdone and prices get below a paying basis. Never fear this; there may be a season when prices may be low, caused by a very large crop, but this will be only for a short time. Have prices ever been better than at the present time? I think not. There will be a market for our fruit at good prices in our northern cities; not this alone, but we can ship to the Twin Cities, or even farther west.

In starting a commercial orchard, bear in mind that an untimely frost in spring, or a hail storm, may ruin our crop for the season; but as to the insect enemies, we don't fear them as we used to. We at this time find some that will condemn apple growing in this part of Wisconsin, saying their orchards

are a failure. What is the cause? Too often it is ignorance, carelessness, neglect; through this many trees have been ruined.

LOCATING THE ORCHARD.

The selection of an orchard site is not governed by any arbitrary rule; all farms do not afford the best soil and exposures for commercial orchards. The best is a high northern exposure. If you cannot have this, then take the next best you have; high ground, well drained, is very desirable. If possible, the site should be elevated above its immediate surroundings, thus giving a free circulation of air; it will be of aid in guarding against late spring frosts, so fatal to young fruit at the blooming season.

SOIL.

A clay subsoil is best; it prevents drying out. Nearly all of the hardwood ridges as we find them in western and northern Wisconsin have the soil for the apple, cherry, and plum.

PREPARATION OF SOIL.

The most important work to be done for the future success of the orchard is in preparing the soil properly. Too often the man going into orcharding is too hasty and sets his trees in unprepared soil. The result is short-lived trees, a feeble growth, easily affected by drouth and extreme cold; and this man at the end of five years will find, if he had taken two years' time to properly prepare his ground and then plant his trees, would find his trees healthier, with a larger growth than if planted two years sooner.

If the soil is worn out, get it into clover, use plenty of land plaster on it, then turn under this crop and thoroughly work it. If the soil is new, as we find it north, then I advise not to use any fertilizers, but clean it from stump and stone, and plow deep. The danger in the north part of our state is in having too rich a soil, and not having enough air drainage, being surrounded by timber, causing too rapid growth and blighting; but this will soon be overcome by the timber being cut, and the land cleared. A good plan, to loosen the subsoil

where there is a stiff clay or gravel, is to use dynamite and explode a cartridge where a tree is to stand.

FROM WHOM TO BUY TREES.

To the young man whose means are limited, I would advise to grow his own trees by setting root grafts in nursery rows, which he can buy very cheap,, say at \$10.00 per thousand, or less. We have men in our state making a special business of raising them. These will be just right to set when your soil is thoroughly prepared. Every commercial orchardist should grow his own trees. To the one who has the means to buy for cash, I say, buy them as near home as possible if you know the trees are O.K. There is no need of going out of the state for trees. I can show you an orchard in my own county of 200 trees, mostly Duchess, from the Beaver Dam nursery, set 45 years ago and down in the valley on a gentle slope facing northwest, that are as healthy and productive as can be found in any state.

SELECTION OF TREES.

This is a very important part of orcharding, for upon care and judgment in the selection of trees depend largely future profits of the investment. Strong, stocky, and vigorous one or two-year-old trees called "whips," having well developed root systems, are preferable.

VARIETIES.

A comparatively safe guide for the planter to follow or to be governed by is: study well his immediate environs and to take counsel of those of his neighbors who have had practical experience in growing varieties on soils and exposures similar to his own. Our trial orchards at Wausau and Eagle River will aid you. Three-fourths of the varieties should be late fall and winter, such that have keeping qualities; but do not plant too many varieties,

DISTANCE TO PLANT.

A decision as to the proper distance varies with different plantings and varieties. Some advise thick planting, say, 16 by 16; others, 30 by 40. I would plant 20 by 20, say, about 100 trees to the acre. I hope in the discussion that we may bring out the distance best suited for the north and west. Spring is the best time to plant, and have straight rows both ways; if possible, have the rows run towards the 2 P. M. sun. By this, one tree protects the other from sun scald, to a certain degree.

CULTURE.

Thorough and oft repeated stirring of the soil is absolutely essential to success. Such culture as will produce a good crop of corn and potatoes will keep the orchard in good health and vigor, providing the ground is fertile and kept so. In no case should small grain or grass be grown in the orchard,—this mistake is so often made by the inexperienced planter; keep your orchard in hoed crops until they get to bearing.

Then quit growing crops but continue every season [in spring] to work the soil every two weeks until July, then sow to some cover crop, either oats, barley or peas [never rye]. This will hold the snow in the winter and retain the moisture. I would say right here, lack of moisture has ruined more Wisconsin trees than the severe winters.

PRUNING.

Pruning and training are necessary in the successful management of the orchard. In looking over the orchards of our State we find so many are bushy, and such can not grow profitable crops.

The objects to be attained are (1) symmetrical and even balanced heads, (2) to admit sunlight and circulation of air, and at the same time maintain density of foliage to protect the trunks, limbs, and fruit from the direct rays of the sun.

What to expect the first five years after planting: First, a good deal of hard labor; second, disappointment in not receiving the

hard earned dollars you are so anxiously looking for; third, a trying time and not so smooth a road to travel as you looked for, but stick to the business, and you will surely receive the reward, from this time on, and have a yearly income to repay you three fold for the time seemingly lost. Protect the body of the trees at least two feet from the ground before winter sets in so the mice and rabbits can not girdle them, use either lath-paper or cornstalks; about this time your trees come into bearing and you are away from the city so that you cannot dispose of your crop readily, at a fair price, then put up a cold storage plant for your own use, it will pay you to do so. Our friends Parsons and Loope put one up last winter; by our next meeting we expect a favorable report from them on the investment.

GATHERING THE CROP.

Neatness and thoroughness should be insisted on in picking and sorting, and in barreling the fruit. Grade your fruit; the apples in every barrel should be of uniform quality, if you hope to build a reputation for the future, every barrel should be branded with your name and this should be a guarantee of its uniform contents. Try and grow the fruit by the carload, this will in shipping to a distance save freight expenses.

To those of the northwest venturing into commercial orcharding I advise to pay a visit to A. J. Phillips of West Salem, one of the pioneer apple growers, who is ever willing to give advice and who has done more for the advancement of the apple in northwestern Wisconsin than any other man; his experimental orchard will be an object lesson to you.

WHOM MAY WE LOOK FOR TO TAKE UP THE WORK OF COMMERCIAL ORCHARDING.

It will be the young men, the students of our late Professor Goff, whose untimely death we all mourn, whom we expected to greet at this meeting, who was a helper to every fruit grower of Wisconsin. Our State Society feels that we have suffered a loss hard to overcome; time will tell of his faithful work done for our Society and the Horticultural students, although gone he will not be forgotten,

Now the successful commercial orchardist will be the one who takes the step route as I will show in the motto, the others will fail. There are many opportunities in the west and north waiting for the right men to take hold of and be successful, also for those living in the cities from hand to mouth to go north into Wisconsin and soon own a fine farm and home.

MOTTO.

"No elevation in the house of success." You reach success not by the ease of a luxurious elevator, but by the slow and certain progress of step after step. If success were reached by the easy elevator route it would be worthless and meaningless. Many have tried to reach success by the speedy sky rocket route and have fallen like a proverbial stick of the exhausted rocket. Work—just good, plain, old-fashioned, honest, persistent, intelligent work earns its welcome way. Time tests all things. It tests success, separates and winnows out the sturdy wheat from the useless flying chaff. Genuine success, honestly earned by the step route, is a legitimate source of pride.

DISCUSSION.

Mr. Jos. Reek: I understand you to say you would set trees twenty feet apart each way?

Mr. Menn: Yes, about that.

Mr. Reek: What use would you make of the land between the trees? Any objection to setting out currants, gooseberries or raspberries?

Mr. Menn: I don't see why you couldn't do that and raise a profitable crop.

Mr. Reek: Wouldn't potatoes work well?

Mr. Menn: Potatoes will work all right; I would prefer potatoes to corn.

Mr. Reek: In the two west rows where the snow was apt to blow off, how would it do to put a row of drilled corn so those two rows would catch the snow and hold it and save the roots from winter killing?

Mr. Menn: It might work all right, but I think in some parts of the country, especially in the northern part of the state there would not be much danger from that source.

Mr. Reek: Perhaps not in the northern part, but in the central part where it is exposed.

Mr. Menn: It probably would work all right there.

Mr. Reek: You recommend planting an orchard of few varieties; would you please name the kinds you would plant.

Mr. Menn: If I was confined to two varieties I would plant the Wealthy and the Northwestern Greening. I don't believe I would plant a half dozen varieties.

Mr. Reek: If you were to plant four varieties what would you recommend?

Mr. Menn: That would be a question of what you grew them for. For a commercial orchard I do not think I would have many early varieties. We have varieties that will keep that we can put on the market when the other varieties are gone.

Mr. Menn: Will you name those two other varieties, late varieties that you could recommend as a desirable apple for planting?

Mr. Menn: Well, I don't know that I would be able to answer that question satisfactorily for the state.

Mr. Reek: Answer according to your best judgment. I am not particular what it is as long as it is a good apple.

Mr. Menn: If we can take cold storage into consideration that would make some difference.

Mr. Reek: No, not dependent on cold storage.

Mr. Menn: For a hardy tree, a good keeping apple lacking a little in quality, I would say the Scott's Winter. At the same time I say it is a little off in quality, but in hardiness it can't be beat. It is very productive, the fruit hangs on and the color is all right.

Mr. Reek: Is it grown much in Wisconsin?

Mr. Menn: I don't think it is. At the New York state fair last fall I heard it recommended by many eastern men, and one man told me it was one of the best paying apples he raised. One thing in their favor is that they are remarkably free from blight. This is an especially bad season for blight, but they are free from blight and bearing very well.

Mr. Reek: You say it is a good bearer?

Mr. Menn: It just came into bearing three years ago.

Mr. Reek: How long have they been set?

Mr. Menn: I think I set them eight years ago.

Mr. Barnes: I have ten in bearing and you can see them within an hour. I believe my good friend was trying to get somebody to advise him to plant Ben Davis. If you are on high ground plant Ben Davis. You will have a long keeper and you will have lots of apples.

Mr. Reek: I thank friend Barnes for his advice, but I have asked that question a thousand times and nine hundred and ninety-nine times the answer is Ben Davis. I set them out two years of age, rather insignificant looking trees, and last evening I looked them over and found a very nice apple on one of those insignificant looking trees. It is kind of encouraging.

The President: I have fifty Scott's Winter trees. I got five barrels of apples in five years and the trees blight. That is my experience.

Mr. Barnes: I would like to disabuse the minds of the people in regard to the advice of my friend Menn as to covering the trunks of trees with lath paper or corn stalks. I did that for a number of years and find that corn stalks are gone just when needed most, and lath and paper are the best harboring places imaginable for insects and larvae. I have found there is nothing so good on earth for protection against sun scald, and against the ravages of mice and rabbits as good strong screen wire wrapped around the tree. It can be cut into sections, can be put around the tree at any time and will last five to ten years and the expense is very little. I procured five hundred of these screens recently at a cost of ten dollars. They are very easy to apply and do not cost as much as lath. I never remove them except to remove sprouts and suckers.

The President: The question of protection has been threshed over a great many times. Our friend Barnes declares against anything but screen, but I think he has lots of lath. I think we had better pass the subject until we get over there and find out for ourselves.

Mr. Barnes: I do not discard everything; I believe the evergreen has come to us as a summer protection.

Mr. Toole: The people down our way told me to ask those fellows up here how to head off the blight.

Mr. Barnes: I come nearer heading off the blight by growing my trees moderately than in any other way. If you grow them rapidly you encourage the blight, but if you have them grow moderately you discourage the blight.

The President: How old are your trees?

Mr. Barnes: Planted from six to sixteen years.

The President. He has got the biggest trees in the state for the time they were planted. (Laughter.)

Mr. Barnes: I guess not; those largest trees have been growing in sod many years.

Mr. Cranefield: The only remedy I know of, and it is only a partial remedy, is to cut off and burn the affected twigs, and in cutting cut as the surgeon does, back into the sound wood. Very little is known about blight. I would be glad to tell you more if I could. The scientists have decided it is a bacterial disease, not a fungus disease. The bacteria is a plant growth much lower in organism than the fungus. It has been demonstrated that trees can be inoculated with blight disease, and that it frequently extends to the roots of the tree. I believe that it is generally conceded that blight is induced by too rapid growth. Whenever you do anything to induce such a growth you commonly induce blight. There are lots of things we do not know about blight, yet we do know it is very bad in this section of the state. Our experimental orchard was planted for the sole purpose of studying blight. We have eighty apple trees planted for the purpose of testing this and other diseases. We have treated certain rows in that orchard with Bordeaux mixture. We aim to keep the branches and foliage covered with Bordeaux. In other rows we have painted the trunks and branches with a mixture of lime and sulphur. It has been claimed that in hot weather when the blight comes there will be enough sulphur fumes set free to ward off the germs of the blight fungus. I do not know whether that is true or not. Other trees we root pruned in the spring and still others we salted. That is what our friend Chappel recommends. We have salted trees as much as six quarts to the tree within a radius of six feet. When we started this orchard we had any amount of blight, but since then

we have not had any. When it comes our way possibly we can give you some results.

Mr. Fairbanks (Mich.): In regard to blight, I remember a gentleman showed me a pear orchard near Rochester nearly thirty years ago in which only two trees were blighted while all around other pear orchards were blighted. Those trees he cured and he told me how he cured them. He claimed that charcoal in the soil would prevent blight. He visited every blacksmith shop he could find and gathered the refuse and scattered it around his trees and in that way he claimed he prevented blight.

Mr. Cranefield: I wish to add one word so there may be no misunderstanding about our experimental orchard. There are rows that receive no treatment whatever. We do not want to be understood as recommending any treatment, we recommend no cure for blight. The whole matter is experimental and we are only trying such remedies as are recommended from time to time.

Mr. Barnes: I have had lots of experience and I believe I can offer one suggestion that may be useful in this matter. Let those varieties subject to blight go. There are varieties that are almost blight proof so far. Discard the Transcendent crab, let us legislate against it, expel it from the state with some other varieties that are equally liable to blight. In that way we will come nearer getting rid of blight than in any other way.

Mr. Menn: How near to the experimental orchard are other orchards affected in this way?

Mr. Cranefield: We have no blight this year.

Mr. Menn: Is there none within a mile or two?

Mr. Cranefield: I have not observed any blight around Madison.

Mr. Barnes: Is the orchard loaded with fruit?

Mr. Cranefield: It is a comparatively young orchard.

Mr. Barnes: Our young trees are not blighting, but our bearing trees are absolutely filled with blight.

Mr. Cranefield: We expect to continue that orchard ten and possibly twenty years. I was surprised to note the great amount of blight as I came up here. In the southern part of the state we do not notice any.

Mr. Holmes: Don't you think weather conditions may have something to do with blight?

Mr. Cranefield: It is possible that may have something to do with it.

Mr. Holmes: When we have had cold rains and hot days we have had much blight.

Mr. Rich: I would like to ask whether this is the ordinary sun blight?

The President: I think it is.

Mr. Rich: While I have been around the country I have noticed some orchards loaded with blight while others are comparatively free, and in talking with different individuals they seemed to think this was not the ordinary blight. They claim it is something unusual. One man considers it due to electric storms. This is a question I am interested in and I am glad it came up here. I have as nice and healthy looking trees as anyone. I have Duchess, Wealthy and Gideon in the same location and they have all had the same treatment. Apparently one is growing as fast as the other. The Wealthy and Gideon are almost ruined by this blight, while the Duchess is almost free from it.

Mr. Toole: I am amazed at the different extremes. I was in the orchard of Mr. Rose at Oshkosh and he was encouraged to think the Wealthy was so free from blight while the Duchess was almost killed.

The President: Is it blight?

Mr. Rich: That I cannot say.

Mr. Cranefield: I tried to qualify my remarks in the beginning. I said they are affected with something that appears to be blight; it looks like blight.

Mr. Barnes:- We have got two diseases on our trees today. We have the old fashioned twig blight that has appeared within the last week. The killing of the fruit stems is something peculiar, it is something different from twig blight. We have called it blight and it is blight, but I believe it is different from the ordinary twig blight.

Mr. Menn: I believe the electrical storms have something to do with it. There is an orchard ten rods from mine where it gets the full effect of the storm as it comes to us. That orchard

is almost ruined with blight. Mine is a little further east and on the west side there is a belt of timber. I have got five rows of trees and there is hardly a bit of blight on them. The storms have full sweep across the other orchard while mine is protected and is free from blight, which seems to show that these storms have something to do with it. I have an orchard that does not get the full effect of the wind and it is remarkably free from blight, while another a half mile away is almost ruined. My theory is that electrical storms have something to do with it.

The President: Remember you are going on record here. I believe it is blight. I have five thousand trees. My young trees do not blight, but those trees that are bearing, no matter what varieties or in what position, are blighted. I want to go on record that I do not go on any of your theories. I believe it is blight.

Mr. Barnes: I say it is blight, but I believe it is two kinds.

The President: I wish to impress this thing upon the society, in the discussions do not take up the time. Make your points clear and concise; get at the root of the matter; ask your questions direct and get through, in that way you get better results. I also want to impress you with the idea that what you say goes on record. It will stand against you as long as books are published.

BLOSSOMS IN WINTER.

By Mrs. S. O. Pingry, Omro.

There seems to be no need to ask, "What shall we plant that we may have blossoms in summer?" The list is long whether for the garden or the window. But what to plant for winter flowers has long puzzled me.

When I first began to have plants in winter, I had few if any blossoms and my first solution of this vexing problem came quite by accident, when I became the owner of a small plant of a species of geranium called by many Gen. Washington or George Washington. In the early winter I was surprised to find on it a cluster of buds. You may be sure I watched it closely and in

due time the little petals unfolded. It was no great beauty to be sure, but a bunch of blossoms to cheer when the drifts lay deep outside, was not to be despised whatever its color. By this time there were more buds on the little plant, and it seemed as if the more it blossomed the more it budded, and all winter the little plant grew and blossomed until it was a *little* plant no longer. Towards spring my husband said, "Well, that is a plant worth having, I'd throw these other things out doors." You may be sure I didn't but I inwardly resolved to have another plant, like the one that had done so well, for next winter.

About this time I read in a piece written by Eben Rexford that if one expected to have blossoms in winter, they must have winter blooming plants, and not those that produce their flowers in summer. With this was a list of plants, many of which I had never seen, some that I had not even heard of. I did not feel that I could buy all these plants, or indeed but a few, but I began to use my eyes more, and when I saw plants in blossom in my friends' homes in winter I asked the name of that particular plant. Some knew, more did not, a friend had given it to them as a slip. But one by one I learned their names, and one by one I have gathered them, until now I have blossoms every day through the long cold winter.

And now I will see if I can tell my experience so others can profit by it. If you expect to have plants blossom in winter you must prepare for it, and now is none too soon to prepare for next winter. In fact my winter garden was begun some time ago.

November is the dark month of the year, and at that time there is no better blooming plant than the chrysanthemum.

"With their gleam of late sweet sunshine
They brighten the closing year,
And keep us thinking of summer
When the winter we dread is here."

Next will come the *early* blooming Christmas cactus. I have one that is always in full bloom at Thanksgiving, and many times is all gone by Christmas; but I am rather glad it is so, for it always blossoms again the last of February and the first of March, so I have the benefit of both seasons of bloom while it is yet winter.

When Christmas time comes the earliest hyacinths are ready to bloom and by this time the petunia you have brought in from the garden is in full bloom. To be sure it is only a petunia, but I know of no other plant that *every* woman may possess that will give so many blossoms. A single plant will bear from 30 to 50 every day for many weeks. Watch through the summer for an extra pretty one and in the fall dig it up, cut off all branches nearly to the ground and place it in a good sized pot or better still in a tin can, for they dry out very rapidly and the tin holds the moisture better than the flower pots. You will soon find it needs a support.

There are some of the begonias that always bloom in winter. I have one that has never failed to be a mass of bloom for Christmas and it continues to bloom until February. I do not know any name for it.

An Otto Hacker begonia will blossom all the year round but will be especially beautiful in winter, its large drooping clusters of flowers are borne on every branch.

A good sized calla lily bulb, in a pot large enough to afford plenty of room for the roots, will, with proper care give several beautiful blossoms throughout the winter. Do not crowd several inferior bulbs in a small pot, and expect the same results as from a large healthy bulb.

There are some of the geraniums that will blossom most all winter or from January on if they have a south window. I have had good results from Mrs. E. G. Hill, Madonia, Mrs. Garr and Madam Bruant, also one other we call Apple Blossom. This last is from the Washington division of the geranium family and for weeks it is literally covered with its delicate pink and white blossoms.

A common oxalis and one of the buttercup oxalis bulbs will give blossoms every day.

If one has only a *little* room one of each of these oxalis and a cyclamen and two or three primroses will give a profusion of blossoms, dainty and sweet, a bright spot

"To cheer us when the storm shall drift,
Our harvest fields with snow."

Too much can hardly be said in favor of the cyclamen, primroses and some of the bulbs, as hyacinths, daffodils or narcissus and freesias, but they as well as the beautiful azalea are rather expensive.

If the azaleas are bought in July or August, they may be had for fifty cents apiece. I have one that was bought at a greenhouse in Oshkosh last July for fifty cents. By September it was set full of buds, and early in February it was one mass of flowers, as nice as any I ever saw at a greenhouse; probably it would have cost many times as much if purchased when in full bloom.

These are by no means all of the winter bloomers, but such as I have found from actual experience to be sure bloomers and as free from insect pests as any plant. Many grow the beautiful roses, the sweet carnations, and many others so beautiful to behold; but, Oh! the endless battle with red spiders, aphids, and mealy bugs is more than I have patience to endure. But the plants I have mentioned are as free from the ravages of these small but destructive pests as any I know of, and I am sure would with proper care (and without it you cannot expect success with any plant) produce blossoms for you all.

HORTICULTURAL RAMBLINGS OF A NOVICE.

Miss Eva Loope, Eureka.

It is a welcome privilege and pleasure to address directly the horticulturists of our state. If there is one thing more than another that will help to make one an enthusiast on horticulture, it is a request from the society to write a paper. When I was asked, I was in a quandary to know what I should write upon. There are a few at the head of the society who know so much and we who are new to the business know so little, that we feel timid in appearing before these veterans of horticulture. But we have eyes and ears, and by observing closely and listening to Nature's voice, our knowledge will increase as we journey along, and who can tell but we may in time be bright and shining lights in horticulture?



VIEW IN PROF. SHAW'S GARDEN, ST. LOUIS, MO.



FRUIT AT WISCONSIN STATE FAIR, 1902.

While riding through the country we have often noticed places that have such a desolate and tumble-down appearance that we wonder if anyone really lives there. Perhaps the next place will be a pleasant farm home with substantial and neat looking buildings, finely cultivated garden, and a well-kept lawn. Then we begin to wonder why there is such a difference in farms that lie so close together. Is it because the owner of one of these farms has developed a greater taste for love of order, neatness and beauty? One can beautify a log house in the wood, or a board shanty on the prairie, if one has an earnest desire to do so. To make these places "bloom as the rose," we shall need green grass, a few trees for shade, some flowers to brighten the scene, and last, but by no means least, the sweet song birds to sing away our troubles or weariness when the time for recreation comes.

The legislature has authorized the setting apart of one day in the year to be known as "Arbor and Bird Day," and recommends that all educational institutions of the state take steps for an appropriate observance of the day. The purpose of Arbor Day was to beautify the school grounds and other public places, but the good work did not stop here. People began to fix up their old buildings, clear the rubbish from the back yards and cut the grass in the front yards. Then began the planting of flowers, shrubs and trees. Perhaps trees about the house will never have any commercial value, but they make your property more valuable, your home more attractive. If you plant trees, you may not live to enjoy their usefulness, but you have by your efforts, forethought and unselfishness left to your children, or your childrens children a legacy better than silver or gold.

"What does he plant who plants a tree?

He plants in sap and leaf and wood,

In love of home and loyalty

And far-cast thought of civic good—

His blessings on the neighborhood.

Who in the hollow of his hand

Holds all the growth of all our land—

A nation's growth from sea to sea

Stirs in his heart who plants a tree."

The horticulturist who raises fruit trees successfully must be continually studying if he wants his trees to produce the greatest quantity and the best quality of fruit. He goes around talking to himself about leaf-blight and scab and aphids, curculio, codling moth, and then comes a lingo about pruning, grafting and spraying. (I know something about this, for we have a horticulturist in our family.) Yes, spraying is one of his hobbies, for most any time of day you can see him going about the orchard with that spraying machine of his. Shouldn't wonder if he could write whole volumes about the subject.

Years ago the old-time farmer, after setting out an orchard, would leave it pretty much to itself. The old gnarled trees, if they bore at all, were allowed to stand; but evidently times have changed very materially. Now, the up-to-date horticulturist refuses to let a tree stand if it does not produce good fruit. Every tree in his orchard is given plenty of room. He knows it does not pay to give valuable space to worthless trees. When autumn comes, his orchard produces quantities of beautiful apples. At the fairs or horticultural gatherings, no one has finer fruit than he, thus demonstrating to his friends that he understands his business and can grow fruit of such superior quality that those less successful dare not compete with him.

The youths of our land are being educated in our schools and universities in this important branch, horticulture; and we shall expect the coming generation to far eclipse our present one in this profitable as well as fascinating business.

Bird Day is rightly put in conjunction with Arbor Day. There was great need of this day, as our native song birds were becoming scarce. We are growing to know our song birds better now and find pleasure in learning of their characteristics and habits. Audubon societies have been formed, the object being to protect the birds in every way possible. The farmer has found he cannot get along without them. "If apples are wormy, the plum and pear tree dying an untimely death, the tender twigs of the oak dropping to the ground in the middle of summer, it is because the birds have been killed and the insects are getting the upper hand of us and we are un-

able to fight them." So, you see, the birds are useful to the farmer as well as a pleasure to all.

What is pleasanter than to hear birds in the early spring? They seem to be just filled with life and song. When you see a bird soaring aloft or skimming along so swiftly near the ground, does it never make you wish you might do likewise? If it does, you have a sympathizing friend in Darius Green, who said:

"The birds can fly,
An' why can't I?
Must we give in
That the bluejay and phoebe
Are smarter'n we be?
Just fold our hands an' watch the swaller
An' blackbird an' catbird beat us holler?"

In spite of his handsome person the bluejay has always borne a bad reputation. Haven't you heard him in early spring, yelling at the top of his voice, as if the whole bird-world depended on him? (He reminds me of the typical horticulturist; he's all "push" and energy, and bound to be heard.) Audubon wrote that the jay robs every nest he can find, sucking the eggs like a crow and tearing the young to pieces. He appropriates the best of everything, and though he destroys insects, they do not counterbalance his crimes. One day not long ago, I saw the "head of our household" take down his gun and quietly steal out in our back yard. My curiosity was aroused by these mysterious actions, and I thought it would be well to watch proceedings. After a while I saw him raise his gun, take aim and fire, and a beautiful jay fell to the ground. The jays have been trying to drive away a catbird which, for several years, had made her nest in our old crab trees. I don't know but what they have succeeded, for I have neither seen nor heard the catbird since. This "man with the gun" has kept after those bluejays all the spring, and now when they see him afar off they begin to scold and yell at him, and then fly away, giving our place a wide berth.

As I have stated before, the birds are of use to the farmer because they rid the land of so many harmful insects. It seems

to me we should all do our best through legislation and personal influence, to protect and multiply the birds.

"I love the sweet birds of melodious song,
I love the sweet flowers that with them belong;
They are both a part of Heaven's own care,
The joyous birds and the flowers fair."

A COUNTRY HOME.

Mrs. G. Main, Stephenville.

We all agree with John Howard Payne, when he says: "Be it ever so humble, there is no place like home." He who is fortunate enough to have a home in the country, so closely in touch with nature, certainly ought to enjoy life and consider himself blessed.

It has been said: "The greatest of great men were farmers' sons." They spent their boyhood days upon the farm, among the green fields, wooded dales, and our humble friends the animals, wherefrom they learned many valuable lessons. Let us look at some of these men: our great Washington, Father of our Country, a man whom all admire. Washington spent his boyhood days upon the farm, and when his political work was finished, he immediately moved to his loved Mt. Vernon, to spend his declining years in the practice of domestic virtues. Lincoln spent his early days upon a farm, and here was the beginning of a life that will ever be looked upon with honor and love. The great poet, John Greenleaf Whittier, spent the first eighteen years of his life on a farm. Here was laid the foundation of the deep interest which the poet has never ceased to take in the toil and fortunes of the common people. Whittier's poems have been published in many volumes; many of his poems owe their origin to his tender regard for domestic life.

Years ago, it was thought any one could farm, but today there is a change of opinion; the farmer needs as good an education as his professional brother, for certainly farming is a profes-

sion; not only does he need an education for one duty, but he must have an ability to do many things. A farmer's occupation is constantly changing. Farming is becoming more prosperous and attractive every year; modern improvements and the rural delivery system make farming a pleasing and profitable employment.

The farmer who thinks farming does not pay, the unsuccessful farmer, is the careless farmer. One can easily judge the farmer by taking a drive through the country; the successful farmer has a neat place, the fences are well made, his buildings are in good condition, his machinery is in its proper place, his animals are enjoying a clean pasture, and his garden and orchard show thought and care. It is such a farm all like to see and where all like to visit; especially do city people enjoy visiting at such a home.

The unsuccessful farmer is easily detected, it is readily seen he is a careless man; his fences are down, gates are loose, fields edged with weeds, his machinery uncared for, and no doubt his cattle are feasting in his best cornfield or perhaps taking a walk to his neighbor's farm. Ask this farmer if farming pays, and he quickly answers, "No, it is nothing but drudgery, and no profit." He answers thus because he is a careless man and has not the ability to care for his work. The most helpful thing to a farmer is care, "A place for everything, and everything in its place." "Order is heaven's first law."

The rural delivery system brings the farmer in touch with the works of our great world, and there is no reason that a farmer and his family cannot be able to converse upon the subjects of the day as well as his city brethren. Numerous magazines and papers may be delivered at the farmer's door every day, and a few moments spent reading these articles give one much valuable information.

In the old countries of Europe, many families have two homes: a city home and a country home. Their greatest enjoyment is taken when they move to their country home; here, free from the noisy city, they spend many weeks enjoying the beauties of the country.

It has been said: "The three sweetest words in the English

language are, heaven, home, and mother." All think of heaven as a place of rest and happiness. The sanctified heart loves heaven for its purity. At some time in many lives the feeling has come: "Take me back to home and mother." An attractive home, then, should be the ambition of all. A country home may be made attractive in many ways: plant trees and flowers, provide literature, and make the country home the admiration of all. Young people enjoy a happy home; if many homes were made more attractive and the young people given more advantages, they would remain on the farm.

"To him who, in the love of nature, holds
Communion with her visible forms, she speaks
A various language; for his gayer hours
She has a voice of gladness and a smile
And eloquence of beauty, and she glides
Into his darker musings, with a mild
And gentle sympathy that steals away
Their sharpness, ere he is aware."

HOME-MADE HANGING BASKETS.

By Wm. Toole, Baraboo.

If directed by ingenuity, necessity, or odd fancies, there is no limit to the variety there may be of home-made hanging baskets. Not all used for the purpose are suitable, but even a paint keg or an empty fruit can may be glorified by the well grown plants which they support, and a tastefully made hanging basket may be, through neglect of the contents, a reproach to the owner.

We sometimes can get from oak trees the covering which has grown over old knots, and from them make suitable hanging baskets. We have such a one at our home, which is filled with a variety of sword fern called Boston fern. The basket is almost hidden by the plants which crowd the ceiling with the fronds, while the tips of these are seven feet from where the older pendant ones reach. The kind of basket which I

wish to describe is specially adapted to these ferns, and some other plants, because young plants will grow out of the sides, giving an unique and pleasing effect.

The baskets are made of straight-grained white cedar fence posts, cut in pieces twelve inches long and split to about three-eighths of an inch square, like samples brought here today. The baskets appear better if showing split surfaces to the outside than they do with a planed, sawed or whittled exterior, so I try to have an even split surface, at least to the outside, and make the thickness of depth even with either plane or knife. Lay two of these prepared pieces parallel and nine inches apart on table or work bench. Place across these two other pieces about one-half inch from the ends. Drive a brad through each crossing, and cross these with two other pieces placed a little closer in from the ends, and fasten with brads as before. Continue crossing with other pairs of sticks, drawing in a little each time and fastening with brads until you have seven or eight pieces to a side. For bottom of basket fasten thinner pieces of similar material to the last two side pieces and clinch the points of the brads. The basket is now ready for the wires for suspension and to hold the corners together, so that the weight of contents shall not pull it apart. Use light copper wire, a piece for each corner passing inside and out, forming a loop at the upper edge of the corner, and twisting the ends together at the bottom. Line with either damp spagnum moss or green sheet moss from the woods when you are ready to put in the plants. Pretty effects may be produced by planting small ferns, selaginellas, or other suitable plants, between the spaces. Rustic baskets may be made in this way from slender growth of wood, but they are not sufficiently durable to pay for the trouble. Use plenty of leaf mould in making up your soil for the sword fern and other ferns, and don't let them have much direct sunshine. Our native ferns are beautiful grown in this way in the summer, but they will have a rest in the winter. For large baskets, plants which combine of themselves upright and drooping growth are the best, like the sword fern, asparagus speengeri, strawberry geranium, and the joint plants; while such plants

as othana, moneywort and Kenilworth ivy need other plants with them, or else should be only in small baskets.

THINNING, PICKING, AND MARKETING NATIVE PLUMS.

By Frederick Cranefield, Madison.

The subject of marketing plums necessarily includes picking, and a rational discussion of these topics involves considerable of plum culture. In other words, we are obliged to follow the directions of the famous cook-book recipe, viz., "First catch your hare."

We should begin to seriously consider the marketing of our crop as soon as the curculio season is past, at which time we may begin to thin the fruit. In the case of native plums, thinning is nearly always a paying operation. The fruits should be carefully thinned so as to remain not closer than one inch apart. In thinning, remove as far as possible, the fruits injured by curculio, or gouger. The thinning may at first seem an expensive operation, but our experience has convinced us that it pays.

The objects sought to be accomplished in thinning are: First, to increase the size and quality of the fruit, without materially lessening the total production. Second, to relieve the tree from an excessive production of seed. Third, to destroy the larvæ of the curculio and gouger. We have usually done this work at the station with our regular hedp, but Mr. Marshall employs girls to excellent advantage. Nimble fingers count for much in this work.

Although on principle the fruits should be thinned when quite small, the work may be considerably delayed and still prove profitable. In the case of two heavily loaded Hammer trees in the Station orchard, one was thinned after the plums were well colored. The plums from this tree were much larger than those from the other tree, which was not thinned, and sold for top price; the others were disposed of as "seconds." We may often, without resorting to imagination, observe an increase

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Frederic Crane



in size of the fruits of the last pickings from a heavily loaded tree over those of the first pickings.

Picking.—Native plums should be picked for market when well colored, but still firm. When soft enough to “eat out of hand,” they are too soft for market; in fact, the best cooks tell us that for jelly the plums should be picked still earlier or while still “crackly.” It is never wise to allow plums to drop from the tree; such fruits are too ripe for market, and invariably “leak.” A few leaky fruits will spoil the appearance of an entire package. This also eliminates the too common practice of shaking the tree.

Plums, both native and foreign varieties, ripen well if picked at any time after the typical color has developed. The fruit should be kept in a dry and dark room. Fruits ripened in this way will hold up much longer than those allowed to ripen on the tree, and we have sometimes thought that the flavor of certain varieties was enhanced by this treatment. The period of ripening of most of the native varieties extends over several days, so that it is rarely possible to gather all of the plums at one picking. We pick in baskets of any convenient size, and do not grade for market direct from the tree, but pick all fit for sale and grade in the packing house. If the plums are carefully rolled out on a large table, they may be quickly graded and repacked. We have usually made three grades: “Choice,” being the largest plums; “common,” a very even grade, and “jelly,” consisting of small, partially ripe and stung plums.

Market Packages.—We have tried many different packages, from a berry box to a bushel basket, and have finally adopted the one-fifth bushel basket as the most convenient, cheap and desirable package. These cost us last year a fraction more than four cents apiece when made up. This price did not include covers. For shipping, it is necessary to use raised, slatted covers. Prices vary as with other fruits. We have rarely, if ever, sold native plums for less than \$1.00 per bushel. The highest price we received last year was \$2.50 per bushel. Most of the crop sold for \$2.00 per bushel on the ground. Our neighbor, Mr. Marshall, brought native plums to market and took home peaches; one basket of plums bought two

baskets of peaches, the size of the baskets being the same in both cases.

DISCUSSION.

Mr. Irving C. Smith: I would like to ask Mr. Cranefield what time the curculio stops working on the plums.

Mr. Cranefield: If I had written my paper a little later, I would have modified that statement. I don't know when they do quit, but for all practical purposes they quit working a week ago. We jarred our trees until a week ago, but since that time we have not got enough to make the work profitable. We are still working in an experimental way. We still go over our trees, and sometimes we have to jar 25 to 30 trees to get one curculio. You can tell pretty nearly yourself by going through the orchard.

Mr. Smith: What is the effect of thinning plums as to the quantity in bushels?

Mr. Cranefield: I don't know that I can tell you. You can eat your cake and still have it. We can only estimate it. To answer your question a little more directly, I should say we have often estimated that we do not reduce the yield, but we can make no positive statement as to that.

Mr. Smith: You increase the value of the crop?

Mr. Cranefield: Yes, we often double the value of the crop. The plums without thinning we sell for a dollar a bushel, whereas the plums that remain after thinning we have no difficulty in selling at \$2.50 a bushel.

Mr. Smith: How do you pick plums?

Mr. Cranefield: We pick the plums from the tree into baskets; we do not shake. Pick the plums before they are quite ripe. If you wait until they are ripe enough so they drop from the tree, they will be too ripe to ship or market; the juice exudes from the plum.

Mr. L. G. Kellogg: Is there anything that will prevent plum rot?

Mr. Cranefield: I can only answer that question indirectly. We can take the experience of plum growers in the

eastern states. They tell us spraying will protect; that a sulphite solution will in a large measure prevent plum rot as it attacks the plums. We have had more or less plum rot at the time the fruit begins to color, but the same disease frequently attacks the plum trees in bloom, as it did ours this year and destroyed half the crop. Spraying with Bordeaux mixture before the blossom opens will in a large measure prevent rot, I understand, but I have no personal experience.

Mr. Smith: What time of day or night do the curculios work?

Mr. Cranefield: I am not well enough acquainted with the habit of the insect to know whether they work at night, but they work in the daytime. We have changed our methods of fighting the curculio since we studied the question more closely. We find we can catch them at any time of the day. It is cheaper to do the work early in the morning if you have hired help, because you are just that much ahead. We have continued our practice of jarring the trees at four o'clock in the morning, but we have learned by experience that we can catch the curculio at any hour during the day except on very windy days when the insects would blow away.

Mr. Smith: How do you dispose of them?

Mr. Cranefield: They are jarred into a hopper that contains kerosene when we use the Johnson machine. When we use the canvas frames we brush them off into a large vat containing kerosene. Kerosene is instant death to almost any insect living.

Mr. Kellogg: Do they fly or crawl up the body of the tree?

Mr. Cranefield: They will do either. We have jarred them off from the tree in the middle of the day and then, by watching them a few minutes, we found they would fly back on the tree. The curculio falls on the canvas and appears to be dead, but it is only playing possum. They will drop just as readily during the day as they will in the morning, but they are more likely to fly during the day than early in the morning.

Mr. Smith: Did you ever try chickens?

Mr. Cranefield: I have not. There is no poultry kept on the farm. We have learned beyond any doubt that cleanliness in the orchard lessens very materially the ravages of the cur-

culio and the gouger. We find the largest number of curculios under trees that are heavily mulched. We find fewer on the ground that is cleanly cultivated than in any other part of the orchard. It seems to me that is a good recommendation for clean cultivation of the plum orchard. For a time we were quite enthusiastic over mulching, but we began to look at it from a different standpoint. We find it is scarcely practicable on a small plantation and we know there is great danger from fire.

Mr. Menn: Do they live near the tree in winter?

Mr. Cranefield: I don't know how close to the tree they stay.

Mr. Menn: How close would you advise setting trees in a commercial orchard?

Mr. Cranefield: Speaking from personal experience, I would plant nearly or quite twenty feet apart. We set trees 12 by 12 feet, or a little over 12 feet, with the idea of cutting out trees as they crowd.

Mr. Laiten: In regard to hens in the orchard, our hens were scratching around the trees very vigorously and eating something. I wondered if it might not be curculios.

The President: My orchard is close to the house where there were quite a number of chickens raised. Last year we took off from an apple tree at two or three different times some fifty curculios, the same thing as the plum curculio. The chickens had a good chance to get them and plenty of them, but they did not seem to do it.

Mr. Cranefield: I think there is no more credit due to the chickens than to the robins and other birds. It is generally admitted that birds are our best friends.

Mr. Everett: What is the effect of mulching on root growth?

Mr. Cranefield: I am not prepared to answer that question as to its effect on root growth. We have had enormous crops of fruit from mulched trees. It is likely to induce growth of roots close to the surface.

Mr. Everett: If you were to cease mulching, your trees would be in bad shape, would they not?

Mr. Cranefield: Yes, if we mulch we have got to keep on mulching. We have made no investigations in regard to the

root growth of the mulched trees, but we believe the theory is right that mulching tends to surface growth. I have frequently heard Prof. Goff remark that he had no doubt it brought the roots to the surface. I am not nearly as enthusiastic about mulching as I was a year ago.

Mr. L. G. Kellogg: A neighbor of mine thinks he has a remedy against the curculio. He says very few of his plums have been stung since he used the device. He ties a cloth band around the tree which he saturates with a weak solution of carbolic acid and water. He says he has had no trouble since using that.

The President: In regard to that, Mr. Cranefield knows that curculios will fly in the air.

Mr. Cranefield: I remember what Prof. Webster said in regard to that. My recollection is, that they might either crawl up the trunk or fly. It is my opinion that a carbolic acid saturated band would stop some of them from crawling up the trunk. I know they are able to fly, and they do fly from near the ground up into the tree, so I would feel in doubt about that being an entire remedy.

Mr. Fairbanks (Mich.): They use another kind of remedy in Michigan. They place a lantern with a kerosene bath under the trees. I heard a gentleman state he caught two hundred in one night. There was a pretty thorough canvass made and the machines sold for two dollars apiece.

Mr. Cranefield: We had last year in our orchard two moth catchers. One was placed in the apple orchard and the other in the plum orchard. They were attended to carefully and they remained there several weeks throughout the season, and we caught not a single codling moth or curculio or any other injurious insect with the moth catcher. I would not buy a machine.

THE BLACKBERRY.

By W. A. Lawton, Twin Bluffs.

Of all our native fruits, for eating out of hand, the blackberry is my favorite. Not the little red berry we sometimes find in the market-place that must be labeled "blackberry" in order that the dealer may not deceive his customer by calling it something else, but the large, luscious, shiny black blackberry, the one that grows in partial shade, under the bushes, the one that the pickers missed the last time they went over the rows; the nectar from such as this is surely fit for the gods, even though they were distilling their nectarean beverage from the dried apple when interviewed by our worthy president. If a visitor to my blackberry patch is suddenly attacked with peculiar convulsive movements of the hand and arm, accompanied by a visible depression of both cheeks, I do not summon a physician, or diagnose St. Vitus dance. If a picker frequently lifts the hand somewhat higher than is necessary to deposit the berry in the box, I am not frightened. There is something in the atmosphere of the blackberry plantation that gives me the same symptoms.

Perhaps this taste for the blackberry was enhanced when a mere boy, by its admixture with the pleasure of gathering and eating the wild blackberry, of which the woods furnished an abundance. It was the picnic season of the year when they were ripe; then the father and mother, the boys and the girls would each take a pail proportioned to his or her ability as a picker, and proceed to the blackberry patch, there to meet with neighbors and friends from far and near, and pick and visit until our pails were full, or until it was time to return home. They did not carry in extra fine shape, but in those days we were in blissful ignorance of the advantages of the Hallock quart box. But such berries!—the memory of their taste lingers with me yet.

During a residence of about a dozen years in the city, where we had occasion to purchase a great many boxes of blackber

ries, the question would often occur to me, "Why are not the tame blackberries, which are supposed to be an improvement upon the wild ones, their equal in eating qualities?" Since growing berries ourselves, we have found that a well grown and well ripened tame blackberry approaches very nearly to its aboriginal ancestors in flavor and sweetness.

We are advised to set the blackberry on deep, rich, moist, mellow soil. As depth and fineness of soil are but conditions for increasing its capacity for storing water, we might define ideal blackberry soil as that which is in condition to hold the maximum amount of moisture and yet be well drained either naturally or artificially, so the problem is quite largely a study of means by which to put our soil in this condition, and when this is solved, the fertility question, also the aerating of the soil, will be quite largely provided for.

Anyone should be able to grow blackberries on soil that is perfect, but it requires skill and labor to produce a crop where the conditions are not ideal, and it is from the latter standpoint that we write this paper. I do not know that the blackberry requires a much greater amount of water to mature its crop than the strawberry and raspberry, but it ripens later, at a time when, if we are not blessed with frequent showers, the water content of the soil is reduced to the minimum by the hot sun and summer winds; so it behooves us to use every effort to not only fit the soil for the reception of water, but also to prevent, as far as possible, its undue evaporation. We are told that water is found in the soil as a film of moisture surrounding each particle, and the finer pulverized, and the smaller the particles, the greater will be the amount of moisture contained. We can increase the capacity of our ground for moisture by growing clover, the roots of which penetrate to a considerable depth, then by turning under the crop at the proper time, or by plowing under other green crops, or an abundance of coarse farmyard manure, we have, upon the partial decay of same, a quantity of that material called humus, the chemical action of which not only fines the soil, increasing its capacity for water, but also unlocks much fertility that would otherwise be unavailable. I believe we should

strive at all times to keep up the supply of humus, especially in our heavier clay soils.

We may retard evaporation somewhat by our choice of slope; thus, on a northern or northeastern slope, or even an eastern slope, we are protected, to a certain extent, from the direct rays of the afternoon sun, and also shielded, in a measure, from the south and southwesterly winds.

We may also retard evaporation by mulching. I find it an excellent plan, and were material plentiful, I would mulch my blackberries along the rows, cultivating between. This not only holds moisture, but adds to our supply of humus. Straw, cornstalks, and manure, with plenty of coarse litter for bedding, would answer this purpose. The most important element, however, in the conservation of moisture, is cultivation, which we will refer to a little later on.

The ground being thoroughly prepared, I prefer to set by line, as the rows can be made more nearly straight in this way. Would not have the rows nearer than eight feet apart, as I have found by experience that a less distance than this makes it difficult to get through with the horse and cultivator, and the man will need clothing made from some very tough material; likewise the horse will also need an extra garment, unless his everyday coat is well-tanned horse hide.

I have had the best success in setting plants about one foot apart in the rows, forming a hedge row. While this plan requires a great many plants and extra labor in setting, I am not sure that the first crop will not be enough better to cover this extra expense and labor; especially will this be true if one grows his own plants. The berries seem to be larger and better where there is ample room for each cane than where crowded together, four or five canes to the hill. When set in hills, I do not try to keep the plantation growing in this shape, but encourage the growth of new canes between hills, and thin out the canes in the original hills.

Cultivation.—Formerly we cultivated to kill weeds. The old rule was, twice through the corn each way with the double shovel, and twice with the hoe. We raised excellent corn, and thought it was because we had kept the weeds out. The modern idea is to stir the soil for the purpose of saving moist-

ure, and, incidentally, we prevent the growth of weeds. The weeds have been a schoolmaster to bring us to something better. Like the old-time schoolmasters, they have been severe and strict in their discipline; they have kept us digging until we have realized, at least in part, the import of the words: "Cursed is the ground for thy sake." They have wielded the whip over us as a taskmaster, forcing us to make brick without straw, until we have learned something of the objects of tillage. As the roots of the blackberry grow quite near to the surface, only shallow cultivation is permissible. We practice, so far as possible, plowing from two to four inches deep (depending somewhat upon the distance from the row), with the one-horse turning-plow, as soon as the soil is dry enough to work in spring, and before taking the plants from their winter beds. From this time on until the crop is gathered, cultivation should be frequent enough to keep a dust mulch on the surface of the soil.

The pruning of the blackberry is a subject upon which it is difficult to give specific instructions. Each grower must learn this quite largely from his own study and observation, but a few principles may be laid down which will give us a basis to work from. It is evident that a soil which is ideal in its capacity for holding moisture, will mature a larger crop of berries than one that is not thus favored. It is also true that the land that is thoroughly cultivated throughout the season will ripen more crates of berries than that which is allowed to become hard and to grow up to weeds and suckers, which compete with the blackberry plants for moisture. Varieties also differ in their tendency to set more or less fruit. Therefore, knowing our soil and the varieties we grow, and having outlined our plan of cultivation for the season, we have something to guide us in the operation of pruning, and I would rather err on the side of cutting back a few buds too many than to risk having a picking or two of seedy berries.

The pinching back of the canes during growth, I am inclined to think from experimenting in a small way, is a good practice; especially with a tall growing variety like the Snyder. I would pinch them about eighteen inches to two feet in height. The branched, stocky cane is not so liable to injury

from heavy winds as the one allowed to grow to considerable height. If we pinch them back too high, the branches are liable to come out from near the top, making the cane top-heavy, thus inviting, rather than preventing, liability to damage from winds.

We cut out the old canes as soon after the last picking as possible, and cultivate between the rows. We are planning from this time on, to sow a cover crop of oats or barley, as one of the means for keeping up the supply of humus.

We have had quite a little difficulty in securing pickers who can tell when the blackberry is ripe. There seems to be a general impression among them that every berry that is black is ripe. There is also more or less color blindness among pickers, many of them thinking that a berry which is about half black is ready to pick. It requires practice, and one should learn to tell a ripe blackberry not only by taste, but by sight and touch. Twice per week is as often as we pick our blackberries. Of course, if we ship to a distant market, we must use judgment and pick somewhat less mature than for a home market. We find that a good way to hold customers is to allow the berries, especially the first picking, to remain on the bushes until we think they are fully ripe; then when a family eats a box or so of them, they want more. Growers are apt to be in too much of a hurry in putting their first picking on the market.

I would not attempt to grow the blackberry without some winter protection. Even the most hardy varieties, I believe, will produce a better crop by being covered, and sometimes we may be ahead the difference between a good crop and no crop at all. If the work is pressing, we sometimes leave them with only as much dirt on as one man can shovel while another lays them down, but prefer having two men who can cover them very nicely as fast as one man puts them down.

The selling and shipping of fruit is to be discussed in a paper to follow, so I will close this paper with only a brief reference to the subject. If we are not so situated as to take advantage of shipping associations, we will need to look up special markets and grow a grade of fruit suited to those markets, but above all things we should make the most of a

home market. We must exercise skill in growing the blackberry, care in picking and packing, and when our customers learn that a box of our berries is to be depended upon, from top to botton, and every time, we will not only hold our own, but our market will expand as the years come and go.

DISCUSSION.

Mr. I. C. Smith: What varieties of blackberries do you grow?

Mr. Lawton: I did not touch upon the variety question. Like breeds of cattle, each has its friends and merits. The early fruit is favored. I have some Taylor and I have been experimenting with the Eldorado.

Mr. Cranefield: You find that the flavor and quality of the cultivated blackberry is not as good as those of the wild?

Mr. Lawton: I used to think so, but I think the Taylor is just as good as the wild.

Mr. Cranefield: Just as good, but not any better?

Mr. Lawton: Well, I don't think it is any better. My taste might be different. The Eldorado is more productive with us.

Mr. Smith: How many crates do you get per acre?

Mr. Lawton: I never estimated that.

Mr. Smith: You must know pretty near what you get.

Mr. Lawton: I cannot give you the figures.

Mr. Smith: One hundred, four hundred, or six hundred crates?

Mr. Lawton: I never got such a crop as you read about. Our soil is not an ideal blackberry soil. While I have got crops perhaps that paid me for my labor, I have not got the immense crops you read about.

Mr. Kellogg: You say you plant them about one foot apart in the row?

Mr. Lawton: One plant comes up here (indicating) at the side of the row, and another here, and I keep about five plants in a space that would ordinarily be taken up by a hill.

Mr. Everett: Do you give them winter protection in that way?

Mr. Lawton: Yes, but it is a little more labor; you have got to put down each cane by itself.

Mr. Herbst: Is it not easier that way?

Mr. Lawton: Yes, it is easier that way.

Mr. Smith: Do you bend them in the root?

Mr. Lawton: Yes, I dig away a space for three or four inches with the potato digger and stick the fork down on the opposite side and put them down that way; I bend them as little as possible in the cane. If the ground is quite wet they will give in the roots more readily.

Mr. Menn: Do you never use stakes or wire?

Mr. Lawton: No, sir.

Mr. Fairbanks: Have you no other varieties?

Mr. Lawton: I have no others. The Ancient Briton is a very nice berry, but when it died out I never replaced it.

Mr. Smith: How do you replace plants?

Mr. Lawton: I most always take them out of the rows, but I never let many come up in the patch unless I want plants.

Mr. Fairbanks: I would like to inquire what variety of raspberry you grow here.

Mr. Lawton: At our place we grow nothing but Cuthbert. We are not growing any this year; they all killed out.

The President: What is the condition of blackberries as compared with a few years ago; I mean the general condition of the canes and the crop?

Mr. Lawton: Well, I don't know that I could answer that. The canes seem to be just as healthy as they were six years ago. I have not had a patch growing six years, but they seem to be just as healthy as ever. Last year we had as good a crop as we ever had until that hot Sunday.

The President: Around Ripon and in our section the blackberry has run out. That is, we cannot get satisfactory canes; they winter kill even when they are protected. The condition of the root is, of course, the reason of it, but they are not getting the crops where they do have canes as they used to a few years ago. I did not know whether that condition prevailed in all parts of the state.

Mr. Herbst: At Sparta blackberry fields are not producing what they used to. They seem to be affected with anthracnose.

I don't think there is a patch there that is not affected with it. I think that is a sample of the blackberry plantations all over the state. They will set fruit freely, but it will not mature.

MARKETING CELERY.

By Irving C. Smith, Green Bay, Wis.

We will presume that you are thoroughly posted in the art, yea, the science of growing and storing celery. You know just when and how to plant the seed. You know when and how to set the plants. You know when and how to cultivate, bank, harvest and store. You know how to construct the storage pit, etc. Knowing all these points, and having produced a crop of fine celery, gotten it stored for late fall and winter trade, we come to the point of marketing.

Of course, when you put your stock into storage, you considered the amount of your trade so as to have it ready at the proper time. You must have sufficient control of the temperature of the storage pit to be able to keep certain parts of it warmer or cooler as you may find necessary, to ripen the stock.

The dressing should be done in pit to avoid breakage in handling and save moving the waste at a time when it is neither cheap nor convenient to do so. Remove all yellow or decayed stalks, then, cut the root to a point, being careful not to cut too high so as to cause the leaf stalks to fall from the root. This takes five or six strokes with a six inch butcher knife. Hold the stock or plant with the root from you and cut with a motion as if you were whittling shavings.

The washing room should be in a warm basement or other room where water is convenient and a boiler or caldron at hand to warm water. A square cornered tub is most convenient. Use plenty of water and have it quite warm, 90 to 100 degrees. This gives a gloss to the celery not obtainable with cold water. Dump a box of celery into the tub with the butts towards you, then with a common soft scrubbing brush give each stock two or three downward strokes of the brush. This takes all the dirt out of the creases and gives it a bright shining appearance.

The tyer stands at the table and ties it up four bunches to the dozen, using common white wrapping twine for the purpose, running strings twice around each bunch.

All decayed leaves or tips should be carefully clipped off, and it is ready to pack for shipment or home delivery. There is a marked advantage in tying 4 bunches to the dozen, instead of one dozen in a bunch as is done in many places. No ordinary family wishes to buy a dozen at once, so the retailer must open bunches, which subjects stock to the inevitable sorting and breaking process. On the other hand, if tied 3 in bunch, the retailer can sell by the bunch and save continual work and waste. An expert tyer will make the bunches so nearly uniform in size and value that there will be little to choose. Another point is gained by having stock appear in better condition and so the sale is better.

If you have a stock of very large celery, it is sometimes well to grade it, making a fancy grade of the largest and a standard grade of the balance. We sometimes even make three grades selling at 20, 25 and 35 or 40 cents per dozen. Now, if you have handled things rightly, Kalamazoo and Milwaukee may as well bid the trade good bye as they will be no longer needed.

Do not think, because Kalamazoo sells at 12 to 15 cents per dozen you must do likewise. It is entirely unnecessary. Drive them out on the point of quality. Respectfully but none the less forcibly turn them out. The same may be true of your shipping trade within reasonable limits. Do not try to bring your trade to the size of your packages, but make packages the size of your trade. Put up any size packages your customer desires, up to the limit of safety in carrying. We have found that a case to hold about one bushel is as large as it is profitable to use. This size will hold about 10 dozen good sized celery. Line cases with paper to avoid drying in warm weather and freezing in cold. Ship by express after cold weather sets in.

DISCUSSION.

Mr. Herbst: What varieties would you recommend for the home garden?

Mr. Smith: White Plume and one of the green varieties. We are using Winter Queen more than anything else at present.

Mr. Herbst: Which is the best keeper?

Mr. Smith: I think the Winter Queen will keep the longest. Still, the other varieties may be kept until spring if properly handled. It is difficult to produce a more perfect winter celery than the White Plume.

Mr. Everett: Have you any trouble with the blight?

Mr. Smith: We have some the last few years.

Mr. Everett: What is the remedy?

Mr. Smith: We have not used any application; our remedy which we use in such cases is to cultivate and force the plants to the strongest possible growth. The blight takes the weaker plants, and if for any reason the growth is checked it is more subject to blight than if the growth of the plant is continuous and rapid.

The President: The trouble with us is not so much in the marketing as on the question of growing; I mean to the common farmer.

Mr. Smith: As I intimated in the first part of my paper, you must have the thing pretty well down at your fingers' ends before you come to the point of marketing. When I was about as high as one of these chairs I can remember of our growing celery and I was full grown before I learned all about the growing and care of celery. It takes a good while.

Mr. A. P. Wilkins: I think I know less about growing celery than anything else on earth. Why don't we have a paper on growing the plant and planting and caring for celery, then we can take up the subject of marketing. I am interested for the reason that I have some land that I think is celery land, possibly one hundred acres. I had an idea of going to Kalamazoo and studying the question. The more I thought about it by myself the less I knew how to take hold of it. What I want to know is whether my land is suitable for the purpose.

Mr. Smith: We are using a sandy loam soil. We plant celery almost anywhere in our garden except in a dry season.

Mr. Wilkins: Will it do in black muck?

Mr. Smith: We have no black muck. I will say, however, that the last purchase of land we made, a strip running clear across the north end, was apparently like the other, but we could

raise no celery on that land until it had been cultivated eight or ten years. We never got a decent crop from it. We planted some on it every year. The fence was moved to the north and the division between the old and the new land was as marked as the difference between day and night. The plants would blight, get a few inches high and then turn rusty and the crop was practically worthless. Now for five years past it is growing good. My experience would make me rather suspicious of new mucky land.

Mr. Everett: Can you grow celery after celery right along?

Mr. Smith: We grow celery as a second crop.

Mr. Everett: I understand growers at Kalamazoo find it necessary to rotate.

Mr. Smith: I find our best celery ground is on a strawberry bed turned over. We turn our strawberry beds over every year and grow celery on them. We do not plant it on the same ground year after year.

Mr. Wilkins: Do you irrigate? Can you grow it on soil that is only dependent on rainfall?

Mr. Smith: Celery needs considerable moisture. Any plant that consists mainly of tops and leaves needs considerable moisture. Sometimes there is enough and sometimes not. You cannot grow it with any degree of certainty and success without means of irrigating on ordinary soil. We have succeeded sometimes and at other times it has been a failure.

SUCSESSES AND FAILURES OF AMATEUR ORCHARDISTS.

By W. S. Hager, West DePere.

When a boy of five or six years, my only knowledge of apples being some seedlings grown by my grandfather, I hopefully started an orchard by planting in nice nursery rows all the apple seeds that I could come at, many of which were crab seeds. Being tended with care and hopeful patience, many of them came in time to bearing. Those of you who have any similar experience will know at once whether it was success or failure. Some

of those crab seedlings were just simply awful, they haunt me yet.

Next comes an experience with trees grown in the eastern states, of varieties not adapted to Wisconsin, some of which lived to bear a few apples and all of which gradually faded out.

Then removing to the northern part of Shawano county and, still hopeful, I invested with the first agent who came along, paid 75 cts. a piece for varieties adapted, and when coming into bearing all were Whitneys. And while being very nice and what every one should have a few of is rather near like a failure for a whole orchard. Nothing daunted I then purchased two hundred trees from a reliable Wisconsin nursery; which, owing to press of other work, were planted late in May; a dry spring followed by an extremely dry summer, and land being sown to small grain that took up moisture which should have gone to the trees, many failed to grow; others were sun scalded and as a whole looked much like another failure.

All of this was experience of value so that two years later upon removing farther north into Oconto county I planted, six years ago, an orchard of 500 trees, some of the fruit of which, I trust, contributed to the honors Wisconsin won at the Pan-American. Modesty would perhaps forbid me to say what I think of this orchard but I have repeatedly been told by those who ought to know that it is one of the best for its age in Wisconsin.

I meant also to state that the fruit last year paid the first cost of the orchard. However do not think that all of this time we were making nothing but failures or were entirely without fruit.

The successes of my neighbors have been usually where trees have been set in some garden plat where they *must* of necessity be cultivated, and where they were afterward given a reasonable amount of care.

Their failures usually come from setting stock not adapted, and shipped long distances, poorly planted in grass or grain land. If that does not "do for" them, two or three winters' use as a yard for cattle and horses to exercise in generally will fix the last remnants. Then goes up the cry, "You can't raise apples in Wisconsin."

Many agents are recommending varieties not adapted, and too large stock.

Finally I am firmly convinced that, in regard to site, more depends upon the air drainage than upon the direction of the slope of the land, and that there is very little damage by blight where trees are not protected by buildings or other large trees. In other words isolated trees, not crabs, rarely suffer from blight.

CARE OF NEW STRAWBERRY FIELDS.

By H. H. Harris, Warrens, Wis.

The strongest incentive to care for anything, comes from having something worthy of our care, that will respond to the care bestowed upon it.

We have this thought in view when selecting a site for our strawberry field, in the preparation of the soil, the marking of the rows, the choice of the plants and when setting the same.

Our best success has been on forest land that has been cropped just enough times to subdue it, one crop of wheat and one of potatoes generally leaves it in fine condition for the strawberry field, and the nearer we can approach such a condition of the soil by turning under green clover or some such growth, the better.

It has been our custom to plow our ground in the fall, then as early in the spring as the soil will permit we work the same over with the disc, always lapping one-half to avoid ridging, and follow with the smoothing harrow and plank float, until thoroughly pulverized. Where the size and shape of our plats will permit we mark both ways, as we can keep the soil more mellow where our new plants are to be, by cross cultivation the early part of the season until the runners get well started, then we are apt to by hand hoeing.

If we get our rows perfectly straight, it adds beauty to the field and makes close cultivation easily accomplished with the fine toothed implements we now have, and this is part of the care that is repeated every week throughout the growing season. We use the hoe, but we like as easy hoeing as possible so we can do

most of it ourselves (for should we try to do it by proxy, as Judge Biggle says he does, we will probably admit the wisdom of the resolution of the political parties, declaring that a proxy does *not* properly represent us).

In selecting our plants we discard everything that does not appear healthy and give promise of fruitfulness, and later if any plant fails to respond to cultivation, we dig it out, preferring to take our chances of filling our rows with the runners from thrifty, healthy parent plants.

In placing the runners is another time we like to be there in person and see that they do not all take root on one side of the parent plant.

If left to themselves the early runners are very apt to set in clusters, leaving vacancies to be filled with later runners that will not likely make as good plants as the earlier ones. We strive to get these first new plants started as early as possible along the line of our rows, removing the weaker runners, if too many start, and also the little suckers that branch out even before a single plant is formed.

As soon as we have sufficient plants well established, we dig out the parent plant and the weaker of the new if too many have rooted, cut off the runners and allow no more to form. This has been our practice on a limited portion of our fields for several years, and the difference in the quality of the fruit where so thinned in comparison with rows of the same varieties thickly matted in the row is so pronounced that we have no hesitation in saying that it pays, especially with such vigorous plant-makers as Warfield, Dunlap and the like.

Where so thinned it gives us another chance to stir the soil in the row which is impossible where the row is matted and over-run with plants and runners, and frequent and continued cultivation of the entire surface is what we desire. We do not get all of our fields thus cared for every year, but have practiced it enough to demonstrate to ourselves, at least, the advisability of decreasing our acreage and giving what we do raise, the best care we know how to give. We have heard other growers when viewing a field we have so cared for exclaim, "I wish my field looked like that and had such berries," but when the way they were made so, was explained they would say, "Oh, I can't spend so

much time on our large fields," but it is *idle talk*, not to say covetous, to wish for *anything* unless we are willing to pay the price.

We omitted to mention, in the proper connection, the importance of removing all blossoms or fruit buds as soon as they appear, but we never neglect to do this, as they weaken the parent plant if left to develop fruit.

We keep the cultivator going until late in the fall, and as soon as the ground is frozen we cover the entire surface with straw or wild hay to protect the plants from freezing and thawing with every change of the weather during the winter and early spring. Most of this covering we rake from immediately over the row into the paths as soon as growth starts in the spring.

SELLING AND SHIPPING FRUIT.

A. L. Hatch, Sturgeon Bay, Wis.

The first thing required is to have the fruit in good condition. This means solid, just ripe fruit, clean and bright. It also means packages well filled. Fruit that is over ripe or soft is not fit to ship and should be sold at home. A strawberry half green is better for shipping when it can not be used in less than two days from picking than one fully ripe. No shipping market wants soft fruit, and leaky berries are always sold at a loss. Berry boxes partly filled and carrying less than they should are never at a premium in any market. The jolts and jars of transportation will settle the fruit till it becomes solid in the boxes and if partly full when finally used there is not only a discount on the fruit itself but on the package as well. One of the points needing attention is the careful filling of the box corners. All fruit should be kept cool, out of sunshine and heat as far as possible.

The ideal and practical unit of business quantity is the car load. That quantity permits of the greatest economy in all the operations incident to the movement from producer to consumer. Where fruit growing is pursued as a business and shipments are necessary to reach good markets it is essential to aggregate the

output of several growers into car loads. This will not only secure better shipping facilities, quicker transit, and cheaper freights, but will also make it practical to use refrigerator cars and reach the great distributing markets of the large cities. Where car loads of fruit can be had, there cash buyers can be secured to pay spot cash for the goods and thus eliminate the uncertainties of commission business. To aggregate the products of many growers it is only necessary to have the growers join together as an association, appoint a salesman and shipper, then let him do the rest. Four years' experience here as salesman for the Sturgeon Bay Fruit Growers' Association has now placed our business upon a firm basis. Although we have had to sell a great deal on consignment to commission men we have been so fortunate as to collect every cent on sales so far and have now the promise of cash buyers for our present crop. Our expenses are shared pro rata by all growers according to the quantity sold for each one. The best large fruit growers of Michigan pursue about the same plan and have succeeded in marketing their crops to good advantage and also in getting cash buyers. For fruit selling we believe emphatically in this statement—*the car load is the unit of business.*

Where sales can not be made for spot cash it is often necessary to make consignment to commission firms. Probably no class of business men are more thoroughly condemned or more fully trusted. Millions of dollars worth of produce are sold by them upon honor with scarcely a restraint or check upon their actions except such as may be dictated by policy or their own conscience. It is little wonder then that selfish and dishonest men enter this field of business to the constant annoyance of decent men and that such suspicion as may be engendered by rascality will often attach to the best firms in the same line of business. Good, strong, honest firms may be found in most all cities by inquiry in the proper channels. Let the best be selected for patronage.

In shipping under refrigeration it is best to have cars well cooled before loading and to re-ice before the car starts. In very hot weather 450 cases are enough in a car and every case is nailed in with strips of lath between the tiers of cases so as to

prevent movement in transit. If haste in cooling is needed, then use salt on the ice in the tanks.

While no man can create a market most markets can be cultivated to increase consumption, and in any case the seller should find the places where fruit is wanted. In these days of electricity the use of the telephone and telegraph play an important part in making sales. I have sold several cars by telephone and received pay by telegraph. In making such sales it is important to look well to a good understanding in regard to inspection, invoice, delivery and acceptance lest the party purchasing claim shortage on receipt of goods when they reach a dropping market. This rule applies also to sales made on the spot, as it is better to close a transaction fully at that time.

REPORTS OF LOCAL SOCIETIES.

ALGOMA HORTICULTURAL SOCIETY.

By M. V. Sperback.

I am one of the members of the Algoma society and I wish to report that our society is in a good financial condition, we have a membership of between eighty and ninety, and we have added to our list something over twenty members during the past year. We hold our meetings regularly once a month, and we have papers, discussions and music, and we have a picnic supper or lunch after each meeting. Every three months we have a meeting where we charge a nominal price for supper and in that way keep up our treasury, and last Friday evening we had a strawberry social and flower show. We had a special meeting appointed for the purpose so our flowers and berries were in the best condition. I think our show would have done credit to the state society if we had it here. We had a fine time and a good attendance. Some of our berries were injured by hail, but strawberries were a fair crop. Apples were blighting quite badly. That is one reason why I came to this meeting: to find out whether it was really blight or whether it was

caused by some insect, and to find whether there is a remedy. It apparently is blight and there is yet no remedy for it, and I believe as Mr. Barnes stated yesterday, that the only way to get rid of it is to dig up our Transcendents. I have two Duchess, one on either side of a Transcendent, and they are both badly blighted, whereas in other parts of the orchard the Duchess are hardly blighted at all. Our Tallman Sweet are badly blighted; some varieties are blighted worse than others.

GREEN BAY HORTICULTURAL SOCIETY.

By Irving C. Smith.

There is one point I want to speak about, and that is: they have all been telling what nice flowers and fruit they have at home, but they do not bring them here. We come together here to learn something, and if you have anything that is good in the way of fruit, flowers, or vegetables, bring them along, so we may know what is being done throughout the state. I went to Eureka with a little exhibit, and when I got into town I began to hustle around among the people, and before the time had expired for setting up the exhibits the people around town came in with various things, and they took quite a number of premiums. They were not going to bring anything, because they said they did not have anything good enough to bring. You can grow strawberries, flowers and vegetables as well as I can. Whether you are going to get any premium or not, bring your exhibits. Do not come here and tell us what good stuff you have at home, but bring it along and let us see it.

GRAND CHUTE HORTICULTURAL SOCIETY.

By J. P. Buck.

I am sorry our delegates are not here to make a report. They expected to be here but were prevented, for some reason. I am hardly in a position to make a report. Our society is in good financial condition; we have about sixty active members. I do not know that I have anything further to report.

EUREKA HORTICULTURAL SOCIETY.

By Mr. Brooks.

I do not know that I have anything to report for the Eureka society, as I am not the regular delegate. I think we have a prosperous society with a membership of from fifty to seventy-five. We have an afternoon meeting once a month with dinner. We just had our strawberry and flower show a week ago. We are now preparing for our chrysanthemum show. I feel repaid for coming to this meeting. I might say that the name of our president is Mr. Becker, and the secretary is Mrs. Bradt. The president of the state society is the superintendent of the chrysanthemum show. He grows the best chrysanthemums brought to our show. (Applause.)

AWARD OF PREMIUMS.

AWARD OF COMMITTEE ON FRUITS AND VEGETABLES.

By L. G. Kellogg.

Your committee on Awards on Fruits and Vegetables have carefully examined the same and would make the following report. I find 5 exhibitors and 40 entries in competition, upon which I have awarded the following premiums:

J. M. Smith Sons, six first premiums.

H. C. Christenson, thirteen first, two second premiums.

H. W. Carpenter, one first premium.

W. H. Holmes, one first, one second premium.

A. D. Barnes, four first, five second premiums.

I also find a very fine and commendable exhibit of vegetables by J. M. Smith Sons, on which I would recommend a premium of 1.00.

Mr. Kellogg: I would also state that I found what I considered an error in the premium list; it should be worded in a different way. It now reads: "The largest and best display of strawberries." While we frequently have a large display of strawberries, it may not be the best in the estimation of the judge, and vice versa. I found the first premium was \$3.00 and the second \$2.50, and in making the award I have taken the liberty of dividing the premium. I found one exhibit much larger than the other, yet I considered the smaller the better display. I have awarded each exhibit \$2.50. I think the wording of the premium list should be changed in the future so as to require two entries, one for the largest and one for the best display.

REPORT OF THE COMMITTEE ON FLOWERS.

The committee on Flowers beg leave to report as follows:
Entry No. 5, House Plants. First premium, Mrs. Barnes.
Entry No. 6, Wild Flowers. First premium, Ray Barnes;
Entry No. 5, Mrs. Barnes, Second premium.
Entry No. 5, Roses. First premium, Mrs. Barnes; Entry No.
3, Second premium, H. C. Christenson
Entry No. 5, Pansies. First premium, Mrs. Barnes.
Entry No. 5, Cut Flowers. First premium, Mrs. Barnes;
Entry No. 1, Second premium.
Miscellaneous—Entry No. 2, Bouquet Cut Flowers. High
commendation

JONATHAN PERIAM,
JOSEPH REEK,
Judges.

LETTER FROM A. J. PHILIPS.

To the Members of Wisconsin State Horticultural Society,
Waupaca, Wis.

Dear Friends:—I am writing this at the home of the old
Lyman's Prolific tree, and only four miles from where the old

Wealthy tree first saw the sunlight. It almost seems to me like hallowed ground, where such useful men as Gideon and Lyman have lived and labored in their chosen calling, and then have been placed by loving friends in their last resting places.

We had a very nice time at the summer meeting of the Minnesota society yesterday at the Experiment Station. When it was announced that they only lacked fifteen members to make their number twelve hundred, a show of hands soon brought that number. The show of strawberries and roses was fine, the Jewell Nursery company showing 35 varieties of roses. Of strawberries, Clyde, Wood, and Warfield seemed to take the lead.

I write this for fear that it will be impossible for me to attend your meeting, as I feel it a duty to visit Uncle Dart, who is quite helpless, before I return home. I have enjoyed many very pleasant meetings at Waupaca and should be glad to be there and shake hands and exchange pleasant greetings with those I have met so many times before; but mingled with our thoughts of gladness come those of sadness, for only eleven days ago I was in Madison attending the funeral of our dear friend and co-laborer, Professor Goff, and yesterday's mail brought me a request from your secretary to take part in the memorial service at your meeting. It would have afforded me a chance to perform a duty I feel, that of impressing on my mind,—and also on the minds of others,—the high appreciation we all had of Professor Goff. I feel that few men are so constituted that they can attain such eminence and command the esteem, confidence and respect of their associates as he. The sight at the grave of a group of boys who were in his Sunday school class, each depositing on the casket that emblem of innocence and token of respect, a white carnation, will not soon be forgotten by the boys or the spectators. How little did he think at our last meeting, when he said such kind, sympathetic words at the memorial service of Brother Hoxie, that at our next meeting kind friends would be performing the same duties for him—but such is life. Last spring when I wrote him I had about concluded to sell out and give up active work in the orchard and nursery, he wrote me: "Please do not do

it. The work you are and have for years been doing cannot fail to be of great advantage to Wisconsin horticulture, and when I say, do not quit now, I am in earnest and mean it." His work is done, and many are the monuments to his memory now growing about Madison and other places, the direct results of his work. I met so many at Madison, and heard it repeated so many times at Minneapolis yesterday: "How sad! What a great loss!" And often follows the question: "Who will, or can, fill his place?"

This letter is getting lengthy, and I will close by saying that I was unexpectedly honored yesterday by being made an honorary life member of the Minnesota state society. I appreciate it an honor to think and realize that my work along horticultural lines has made me a life member of the largest society in the United States, and that I am also a life member of our own state society.

Wishing you all a pleasant and profitable meeting, I am,

Yours truly,

A. J. PHILIPS.

P. S.—I was under the branches of the old Prolific tree this morning; it is full of fruit.

In Memoriam.

PROF. E. S. GOFF, MADISON.

DIED JUNE 6, 1902, AGED 49 YEARS.

Emmett Stull Goff, professor of horticulture in the University of Wisconsin, died early Friday morning, June 6th. Professor Goff was born in 1852 on a farm near Elmira, N. Y. His early training, like that of many others who have achieved success, was had in the common schools and at the plow-handles. In 1869 he was graduated from the Elmira Academy; appointed horticulturist at the Agricultural Experiment Station, Geneva, N. Y., in 1882; appointed professor of horticulture in the University of Wisconsin and horticulturist of the Wisconsin Experiment Station in 1889, which position he held until the time of his death with increasing credit to himself and the institution.

The equipment of the department of horticulture at the time of his appointment was very meagre, consisting of a very limited plantation of small fruits and office room in Agricultural hall. Less than a dozen students sought horticultural work at this time. During the past school year over three hundred students received instruction from Professor Goff in a splendid building devoted to horticulture, with the added advantages of field work and observation in several acres of nursery and fruit plantations, containing thousands of specimens and hundreds of varieties. This growth of the horticultural department, although following to some extent the growth of the Agricultural College in general, is due in no small measure to the persistent efforts of Professor Goff.

His "Principles of Plant Culture" and "Lessons in Pomology," each representing months of hard labor, were the out-



E. D. Goff

growth of his experience in the class room. The professors who have built up the splendid course of instruction in the short course were pioneers in the work and were compelled to furnish texts for class work as well as to demonstrate principles. The execution of these two works by Professor Goff was accomplished almost wholly in hours and days that should have been devoted to rest and recreation, leaving him without a reserve force to fall back upon at the end.

Professor Goff's work in the field of investigation entitled him to rank with the leading scientists of the present time. His first important work was a study of the apple scab fungus. In connection with Professor Gallaway he conducted the first successful series of experiments with fungicides for the control of this disease. He was a pioneer in spraying.

The fact is not generally known that Professor Goff invented the kerosene attachment to spray pumps. This device so commonly known as the "Weed & Gallaway" attachment was first applied to the old Nixon tripod pump, and the original model is now in the Horticultural building.

His experimental work, as recorded in the reports and bulletins of the Experiment Station, is remarkably full and valuable. His recent investigations in regard to the formation of flower buds have attracted worldwide attention. While ranking as a horticulturist, much of his work in recent years was regarded with attention and respect by leading botanists. Earnestness and persistent application to duty in spite of ill-health and other obstacles mark his work.

His home life, his church work and his social relations were well defined by these words of his pastor: * * * "A kindly, Christian gentleman." Volumes could tell us no more. He was a member of the Congregational church and an earnest worker in many causes that aimed at the uplifting of his fellow-men. No such cause in the city, no matter how humble, but received material aid from him.

Kind and considerate at all times, his scholarly attainments, his spotless life, his unswerving honesty of character and purpose, his constant and untiring application to his duty, won for him the admiration and sincere affection of his friends and

associates, and their inheritance is an inspiration to better lives and nobler deeds.

He leaves one child, a son thirteen years old, his wife having died a year ago.

FREDERIC CRANEFIELD,
Madison.

RESOLUTIONS ADOPTED AT SUMMER MEETING OF THE SOCIETY.

Waupaca, Wis., June 27, 1902.

The committee on Resolutions appointed by your president having met on this date, offer to following resolutions, to be adopted by the society and printed in our annual report:

Resolved, Whereas death has taken from us our friend and co-worker, Professor E. S. Goff, we hereby endeavor to express our sorrow for our loss, and our love and esteem for one who was ever directed by christian kindness in his intercourse with his fellow-men. Our Wisconsin State Horticultural Society will ever miss his wise counsels and friendly presence, and the cause of horticultural science has suffered a loss which cannot be recovered. As a friend and brother we will ever hold him in loving remembrance.

Resolved, That our society hereby express to the members of the Waupaca Horticultural Society and their friends, their sincere thanks for their hearty welcome and kind entertainment.

Resolved, That it is the pleasure of this society to tender to Mr. and Mrs. Barnes our thanks for all they have done in entertaining this society during this summer meeting of 1902.

Resolved, That it is the sense of this society that our thanks be tendered to Mr. and Mrs. Churchill for their cordial invitation and for the opening to our inspection their handsome grounds.

Resolved, That our thanks be tendered to the ladies and gentlemen who appeared on our program, Wednesday evening, and gave us such choice music for our entertainment.

S. H. MARSHALL,
WM. TOOLE,
L. T. LATTEEN,
Committee.

RUSHFORD HORTICULTURAL SOCIETY.

Rooms of Rushford Horticultural and Improvement Society.

Eureka, Wis., June 21, 1902.

To the Members of the Wisconsin Horticultural Society in
Summer Meeting at Waupaca:

The following resolutions were this day tendered to our society by Dr. T. E. Loope, unanimously adopted, and respectfully submitted to the state society as a small token of our appreciation of the merits and character of an ardent co-worker in the lines of horticulture and in its many co-ordinate forms.

WHEREAS, Inexorable death, who loves a shining mark, has removed our Professor Goff, and

WHEREAS, We recognize in him a most estimable man and a profound horticulturist, therefore,

Resolved, That the Wisconsin State Horticultural Society has lost a scientific worker, a friend in all good works; a scholar, whose fame was not bounded by the limits of state or nation; and our state, a scientist, whose place cannot be filled, and a modest, unassuming man whom to know was to love.

Resolved, We deplore the fate that called him away in the zenith of his life work, and tender our sympathy to the State Horticultural Society and all who have known him.

Resolved, That these resolutions be forwarded to the summer meeting of the State Society at Waupaca.

Attest: W. H. BECKER,

President.

H. H. G. BRADT,

Secretary.

OMRO HORTICULTURAL SOCIETY.

Omro, Wis., June 13, 1902.

Resolutions adopted by the Omro Horticultural Society.

The members of the Omro Horticultural Society learn with sorrow of the death of our esteemed friend and co-worker, Professor E. S. Goff, therefore, be it

Resolved, That in the death of Professor Goff the state of Wisconsin and the State Horticultural society lose one of its most valuable and efficient members. Therefore, be it further

Resolved, That the Omro Horticultural Society unite with the Wisconsin State Horticultural Society in sending to the relatives and friends of the deceased a message of our condolence and respect.

Further, That a copy of these resolutions be spread upon the records of our society.

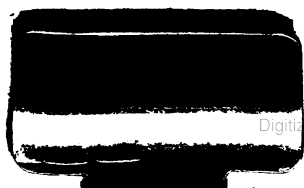
E. J. LEWIS,
W. P. BUSSEY.
R. T. DARROW.

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~~CONFIDENTIAL~~ MISSION,



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